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food digest

National Information Centre
for Food Science and Technology
Central Food Technological
Research Institute, Mysore

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FOOD DIGEST

Volume 4 Number 1

January—March 1981

National Information Centre for Food Science and Technology
Central Food Technological Research Institute, Mysore-570013
India.

CONTENTS

1.	RAW MATERIALS	1
2.	STORAGE & INFESTATION CONTROL	1
3.	FOOD ADDITIVES	2
4.	PROCESSES	5
5.	BYPRODUCTS & WASTE UTILIZATION	9
6.	PROCESSED PRODUCTS	10
7.	EQUIPMENT & MACHINERY	10
8.	PACKAGING	18
9.	ANALYSIS	21
10.	COMMERCIAL INTELLIGENCE	24
11.	FOOD REGULATION, QUALITY CONTROL & HYGIENE	32
12.	TRANSFER OF TECHNOLOGY & NEW INDUSTRIES	37
13.	PERSONALIA	38

RAW MATERIALS

1 High lysine yeast

A unique type of mutant yeast, which produces much more lysine than normal, may hold the key to making more nutritious foods. The yeast is a mutant of the kind used throughout the world to make leavened bread. Normally, yeast, as well as bacteria and fungi, produce only enough lysine to meet their own nutrient needs. However, the mutant yeast continues to manufacture lysine long after the others have stopped. The new yeast has been developed at the Montana Agricultural Experiment Station. Bread from mutant yeast which contained up to 26% more lysine than normal bread has been produced. A high-lysine mutant of the bacteria used to make sour-dough bread has also been developed. By combining this bacteria with mutant yeast, the lysine content of sour dough bread was increased by 127%.
(Food in Canada. 40(6); 1980; 43-44)

STORAGE & INFESTATION CONTROL

2 Gaspak : A new method to preserve food

Scientists at the University of Maryland have developed a new method of preserving raw or partially processed foods that is substantially more energy efficient than canning or freezing. The process, known as GASPAK, treats foods with gases that retard bacterial growth and food aging. According to Dr. Amihud Kramer, the food scientist who first conceived of the process, savings could be made of up to 80 percent of the energy now used to process foods from the farmer's fields to the consumer's table.

The GASPAK process involves placing a food substance - sliced apples for example -- in a chamber and remove all the air before treating the food with gases, such as carbon monoxide and sulfur dicxide, which inhibit enzyme and bacterial action in the food. The treated food is then packaged in a germ-free container filled with gas that will continue to inhibit germ growth and structural deterioration for long periods of time.
(League for International Food Education. July 1980; 3)

3 Bin Activator

The Simon-Solitec (UK) bin activator is a vibratory unit designed specifically for consistent flow of particulate solids from bulk storage. By imparting vibration [illegible] the material being handled, [illegible] segregation. [illegible] flow and [illegible] material is changed [illegible] first-in, first-out [illegible] is [illegible] important

in the food and process industries where product quality must be constant. A range of sizes is available from 2' (610 mm) to 12' (3,658 mm) in diameter and in either normal or heavy duty construction. The ratio of activator to silo diameter is determined based on the size of the silo and the material characteristics. Contact materials can be of mild steel or various grades of stainless steel, complete with food quality Neoprene flexible sleeves.
(Protein Foods and Nutrition & Development Association of India Newsletter No. 51; September 1980; 2)

4 Bacteria help to preserve fish

Norwegian research workers claim to have developed a new method of preserving fish which could help improve exploitation of protein resources locally and in a number of developing countries.

Their method is to use lactic acid bacteria in the same way that a cabbage is pickled and cream is converted to heavy sour cream. Used on fish in Norway, the method would simplify storage. It also avoids the use of chemicals suspected of being carcinogenic.

Fodder mixtures treated with this method are reported to keep for a long time. Lactic acid is also well-suited for the preservation of minced fish.
(Fishing News International. 19(3); 1980; 39)

5 Method to control rats

This indigenous method to control rats consists of mixing 3 parts of dried fish powder with 1 part of cement thoroughly. The bait should be kept where the rats are expected to visit. Attracted by the strong smell of fish powder (usually small fishes such as dried prawns are used) the creature very well eats it. Once in stomach, the cement starts to act. There meet the end of the animal. Utmost care should be taken that the bait should be kept completely free of moisture. It is non-poisonous. However, animals should be taken care of.
(Macco Agricultural Digest. 5(6); 1980; 9)

FOOD ADDITIVES

6 Anoxomer - a new food additive

The widely used antioxidants BHA and BHT are suspected of causing liver damage. Recently, Dynapol Co., a California-based firm has applie for FDA approval of its antioxidant, a molecule too large to be absorbed from gastrointestinal tract. The company expects that the product, call anoxomer, should it be approved, stands to capture a significant fractio

of the anti-oxidant market. The currently used compounds primarily butylated hydroxytoluence (BHT), butylated hydroxianisole (BHA), and terbutyl hydroquinone (TBHQ) are added directly to human food to ensure adequate shelf life. The technologists at Dynapol Laboratories attempted to polymerize or co-polymerize an active monomer containing all the functionality needed for the final product. Thus, starting with various phenols and hydroquinones - a family that includes BHA, BHT, and TBHQ they add divinylbenzene and achieve a condensation polymerization with an aluminium catalyst. A key attribute of the polymeric product is its thermal stability, since any significant breakdown into low-molecular-weight species during cooking obviously would obliterate the non-adsorption principle. Anoxomer has already been subjected to the usual battery of toxicity, teratogenicity, and carcinogenicity studies. No significant effects have been found at anoxomer levels upto 5% of the diet. Dynapol researchers have also made a special effort to test anoxomer's effect on the liver.
(Chem. Eng. News 58(18); 1980; 22)

7 Chemical to prevent mould in sliced bread

To prevent the possibility of mould formation in sliced bread, Hoechst, UK Ltd have developed Panosorb, described as a highly effective product which is pure sorbic acid with no additives. Hoechst sorbic acid is produced by a special process and has a relatively coarse crystal structure. It is dust free and has a considerably lower inhibition effect on fermentation than products previously used, it is claimed. In practice, this means a reduction in the amount of yeast required, cost savings and an improvement in bread quality.

Panosorb is mixed-in dry during preparation of the dough. Because of its high activity, low additions of about 100-150g/100 kg of flour are sufficient. Depending on the bread type, about 1-2 kg of yeast per 100 kg flour can be saved. The lower figure applies to mixed rye bread and the higher for wheat bread and toasting bread.
(Food Processing Industry. 48(577); 1979; 64)

8 Foodstuff with flavour precursor

The present invention relates to a foodstuff to which has been added, as a meat-like flavour and aroma precursor, at least one 2,2,3-substituted thiazolidine carboxylic acid, or reaction product thereof, such that the 2 substituents in the 2-position are an alkyl or hydroxyalkyl moiety with 1-8 carbon atoms, resp. The 3-substituent, attached to the nitrogen of the molecule, is a similarly constituted alkyl or hydroxyalkyl moiety. Flavour and aroma are generated on heating the food containing the precursor, which may be prepared by reacting cysteine with a secondary ketone under conditions such that no browning occurs, and in molar ratio of 1:1-2.

Uses contemplated include addition to synthetic meat or meat analogue, or to prepare a cooked-beet flavour by heating the precursor with a C10-C20 fatty acid and an edible organic acid. Examples of use of the precursor system are given.
(Protein Foods and Nutrition Development Association of India. 12(3/4); 1980; 7,8)

9 Onion flavour rises in strength

In what is claimed to be a breakthrough in onion flavour development and of major importance to the food industry, particularly meat processors, canners and savoury product manufacturers, Bush Boake Allen has developed a new method of onion processing.

The process, allows the end product to retain the fresh onion character, so enhancing the flavour of other ingredients in the food. Samples made at the pilot plant stage have been supplied to a selected list of potential customers with "a very encouraging reception" claims the company.

The new onion product - in the form of a pourable emulsion is said to be an entirely natural alternative to raw or dehydrated onions but with a flavour strength between 30 and 40 times that of freshly crushed onion.
(Processing. 26(3); 1980; 13)

10 Reduction of butter levels in toffees and caramels

Recent advances in flavour technology have allowed Food Industries to develop a new Butter Flavour (31 13 729 - Butter Flavour NNL), which develops cooked butter notes on heating from a flavour precursor system incorporated into the product. Trials have shown that caramels and toffees with excellent Butter notes can be produced without any Butter being present in these products. Certainly a reduction in butter level of 50% is possible without any alteration to the flavour of these confections. Butter Flavour N.N.L. contains a flavour precursor system specially designed to produce cooked Butter notes during the boiling process.
(Confectionery Production. 46(4); 1980; 159)

11 Carrageenan for suspension of pulp in fruit drinks

The Pulp in drink mixtures containing two or more different fruits can now be suspended without undue viscosity build-up using an all-natural gum system developed by TIC Gums, Inc. called Ticaloid 441, the product is added in about 0.5% concentration about 1 part in 200 by weight, to solve one of the most vexing problems of the bottled drink industry, the suspensions of different types of pulp in mixed juices.

The combination of relatively low viscosity, desirable mouthfeel and excellent pulp suspension characteristics makes this product a unique

and popular choice for bottlers and beverage producers cost-to-co st. In addition, Ticaloid 441 does not require heating to achiev its bene-fits.
(Food in Canada. 40(6); 1980; 51)

New cocoa butter extender

Durkee foods announce the introduction of Kaobien, a new cocoa-butter-compatible fractionated vegetable oil designed specifically for addition to chocolate. The product is similar in composition and crystal structure to cocoa butter. When used as an extender of cocoa butter at levels up to 15 percent Kaobien does not significantly alter the organoleptic properties, handling characteristics or shelf life of chocolate, it is claimed. The product is particularly suitable for use in milk chocolate recipes which employ milk crumb with high milk fat levels.
(Food Processing Industry. 48(577); 1979; 64)

Sesame extract blended soy milk

Sesame milk produced from defatted roasted sesame at a ratio of 1:7 with water, after 1 hr soaking at 60° and pH 7.5 gave best results for extraction of protein. Addition to this sesame milk to soy milk at 1:1.6 v/v and 2% sesame oil improved the nutritive value of regular soy milk to that of cows' and human milk. Improved soy milk contains 2.3% protein, 3.2% fat, 68 cal/100 g, and increased % of S-containing amino acids. The chemical score is increased from 54 to 106 without reduction in the % of the other essential amino acids or an imbalance in the essential amino acid patterns. The acceptability of the soy milk is reduced by additions of sesame milk and sesame oil due to its bitter taste and sesame odour, though the colour is improved.
(Protein Foods and Nutrition Development Association of India. 12(3/4); 1980; 11)

PROCESSES

Steam treated flour makes better sauce or gravy

A Texas milling company is offering a steam treated wheat flour product that improves the quality of food products. The steam treatment inactivates natural enzymes which would otherwise hydrolyze the starches and result in low viscosity sauces unless excess quantities of flour were used. In the classical preparation of a sauce, flour is precooked with a fat such as butter to form a roux. The sauce is prepared by combining this roux with the liquid such as meat stock or milk. The precooking inactivates the enzymes.
(Food Nutrition and Health. 3(6);.1979; 1)

15 Extrusion texturization of whole soybeans for use in meat analogs

Whole raw soybeans were first subjected to various pre-treatments including cracking, steaming, alkaline soaking, grinding and hot/cold flaking. The product obtained was then blended with high protein materials (e.g. wheat gluten, soy protein isolate, soy protein concentrate, full fat raw soy flour), prior to extrusion cooling: the high protein materials increase the protein content to ≥ 50% and substantially improved the textruizing process. It was found that the most important parameter for texturizing by extrusion is the protein to carbohydrate ratio; this must be atleast 1.0 to obtain a minimum texturization of the rehydrated product. Another important parameter is the solubility of the protein, maximum solubility being desirable. Since heat treatment of the ingredients prior to extrusion reduces protein solubility, attempts were made to develop at room temperature. Process for preventing oil separation; alkali treatment of some of the soybean component gave acceptable results but complete success (i.e. texturi ation with no oil separation) could be achieved only by pulverizing the untreated soybean component to a flour which passes a 0.01-in opening screen. Further studies indicated that a formulation consisting solely of full fat soybeans (40% protein, 33% carbohydrate, 22% oil) could be successfully texturized; photomicrograph studies were made to examine the relationship between protein, carbohydrate and oil in the extrudate.

(Protein Foods and Nutrition Development Association of India. Newsletter No. 57; 12(5/6); 1980; 9-10

16 Processing of Sal seed

Sal seed is obtained from sal tree (Shorea robusta) well known for its tough wood, used in railway sleepers, etc. Sal trees abound in the forests of Madhya Pradesh, Uttar Pradesh, Orissa and West Bengal.

The seed contains a hard green fat which may be used as an extender for cocoa butter in making chocolate and as a component in soap making. Sal fat so far has found its way into the world market in limited quantities from Malaysia and Indonesia under the name of Borneo tallow or green butter. It is in short supply and highly priced.

Process : Sal seed, when dry, carries a brittle, papery outer covering. Decortication of the seed results in hard, round, dark-brown to greenish kernels. After size reduction the fat is removed from the kernels by solvent extraction to obtain good yield. The products are crude sal fat and the solvent extracted meal. The crude fat is refined with alkali and then treated with bleaching earths and active carbon, yielding a white fa

The soapstock from processing of salt fat is green in colour but

can be bleached to a white shade. This forms a valuable hard component in the charge for soap making.

Sal meal (solvent extracted oilcake) is a major product (52%) in the process. It is rich in starch (over 60%) and has low protein content (10%). It can be used as food for cattle-especially for pigs and poultry where starch rich feeds are required. After isolating starch, sal meal can be used for sizing in textile industry. Work to explore various applications of sal meal is in progress.

Sal husk is a by-product of the process obtained in large quantities. To save transport costs it is advisable to remove the husk by decorticating the pods at the forest collection site itself. Simple decorticators have also been devised by RRL, Hyderabad for the purpose.

Scale of investigation: The investigation was carried out on a pilot plant.

Raw materials: The raw materials required in the process are sal seed, solvent, etc. and are indigenously available.

Equipment : The main items of equipment needed are hullers, separators, bucket elevators, cooker, cooling tower, drier, solvent extraction unit, vacuum jet ejectors, storage tanks and boiler, all of which are indigenously available.

Capital investment : The total capital investment for a plant having a capacity of 60 tonns Sal seed/day is estimated at Rs.7 million.

Employment potential : About 120 persons are required for operating the plant.

Status : The process has been licensed to one party, which is in production.
(Invention Intelligence, 15(1); 1980; 36)

Improved technology for bleaching of in-shell walnuts

India ranks fifth among the walnut (Juglans regia) producing countries in the world. During 1977-78 walnuts worth Rs. 6.78 crores were exported, out of which in-shell nuts constituted 3450 tonnes, valued at Rs. 2.6 crores. The quality requirements for export demand a well bleached clean product with attractive bright shell appearance. Even in home market such product fetches better price.

The traditional practice of bleaching involves raking of walnuts in lots of 40-50 kg in about 400 litres of solutions of soda ash/hydrosulphite of soda/quick lime/bleaching powder/mild caustic, singly or sometimes in combination. After this initial treatment the walnuts are transferred to a tank containing dilute H_2SO_4. From this tank these are transferred to clean water for rinsing and washing finally with water and then sun drying for 2 days.

This process is ineffective, crude and cumbersome. During the treatment some water enters the shell through crevices, making the kernels prone to fungus attack.

After a number of experiments a simple bleach formula has been developed and various parameters for its application worked out. The process involves treatment of nuts with the solution in a mechanically tilting enclosure which effects surface abrasion caused by the fast agitation. During a short reaction time of 3-5 minutes only, the adhering resinous material is loosened and separated from the shell with simultaneous surface bleaching as a result of chemical action. The nuts are rinsed in plain water for a minute and sun dried.
(RRL, Jammu, Newsletter. 7(3); 1980; 16)

18 Reverse osmosis for water purification

Clearwater Systems is introducing a complete range of reverse osmosis systems for the production of purified water, particularly suitable for the production of potable water from brackish sources, pre-treatment for de-ionisers, make-up for air-conditioning and heating systems and other areas where purified water is required.

Reverse osmosis is a membrane process which removes 90/95 percent of the dissolved solids and virtually all of the organic and colloidal impurities from water. Clearwater is offering two types of systems, the MicRO and MacRO systems. The MicRO is a package system with output of from 1 m^3/day to 45 m^3/day. The MacRO series begins at 60m^3 and extends up to any required output.
(Manufacturing Chemist. 51(2); 1980; 59)

19 Improving SCP bacteria by genetic engineering

A new approach for producing single cell protein (SCP) more efficiently and in quarter yield. Altering the genetic make up of Methylophilus methylotrophus leads to an organism that grows better than the naturally occurring bacterium in a methanol nutrient medium. Carbon conversion efficiency is improved without increasing energy input.

A drawback to using naturally occurring M. methylotrophus is that its route to nitrogen assimilation is generally inefficient due to the absence of the gene that codes for glutamate dehydrogenase; the enzyme essential for removal of [illegible] ammonia from glutamic acid. Instead, M. methylotrophus possesses the [illegible] producing glutamate synthase, which leads to a less efficient nitrogen assimilation pathway. This problem was overcome by mutating the glutamate synthase-producing gene thereby [illegible] glutamate dehydrogenase [illegible] E. coli it into M. methylotrophus. All tests carried out so far indicate that the modified bacterium [illegible] identical to the naturally occurring organism

apart from its improved metabolism.
(Chemical and Engineering News, 1980, 58(18); 30)

BYPRODUCTS & WASTE UTILIZATION

0 Chemical from rice husk ash

The Central Glass & Ceremic Research Institute (CGCRI), Calcutta, has developed a process for the manufacture of sodium silicate from rice husk ash furnishing yet another example of making effective use of wastes. Sodium silicate is a chemical used in the production of soaps, detergents and silica gel (desiccant). Compared to the existing conventional process for the manufacture of the chemical the CGCRI process requires low capital investment and is quite suitable for the small-scale society run in rural areas.
(Financial Express. December 7, 1980; p 5)

1 Cement from husk

Quality cement can be produced from rice husk, a waste product, according to Regional Research Laboratory (RRL), Trivandrum.

The laboratory, which is engaged in work relating to the utilisation of agricultural and industrial wastes has found that fine silica particles, produced from controlled burning of rice husk yield good quality cement when mixed with lime shell.

Laboratory scale trials on the cement made out of rice husk, as hand lime shell have yielded extremely satisfactory results.

(Financial Express 29th September 1980, p1)

2 Bio-gas operated generators

A bio-gas operator capable of producing electricity for lighting rural homes, driving irrigation pumps and operating farm machinery has been developed by Indian Institute of Technology, (IIT), New Delhi. The system is highly economical because it uses animal waste, farm waste and organic waste for producing bio-gas.

A medium sized plant using nothing but agricultural waste or animal waste can produce enough gas to operate the generator for nearly eight hours a day. The engine used in the generating set is a conventional diesel engine with some modifications enabling its operation with bio-gas as main fuel.

Nearly 85 to 90 percent of its fuel requirement is met by bio-gas. For the remaining 10 to 15 percent, diesel is used in the conventional

manner just to initiate and assist combustion of bio-gas.
(Economic and Commercial News. 10(45); 1980; 10)

PROCESSED PRODUCTS

23 Protein-rich drinks

Food and Technology Department of the Punjab Agricultural University has produced a unique protein-rich drink for the milk-starved people of the country. The bottled, flavoured malted 'cross drink' is a mixture of 60 per cent milk and 40 per cent wheat extract including solubles, proteins and carbohydrates. Experiments to mix extracts from other grains like maize, rice and barley etc. are also being carried out.

The department has already developed a ready-to-serve grapefruit juice. A touch of bitterness makes it a useful fruit drink from the medical point of view. It has also the qualities to activize the liver and keep cholesterol low.

Bottling of sugarcane juice has also been developed. It would ensure better hygiene than the present crushing system.
(Yojana. 24(13); 1980; 29)

24 Cheese from peanuts

Scientists at Texas A&M University have produced peanut cheese from peanut flour and milk protein. Other cheese analogues have been made from sodium caseinate a more expensive product obtained from milk. In the Texas's experiments the peanut cheese analogues were judged as having the most desirable flavors of all the analogues tested in casseroles, pizzas, and sandwiches. It gave the most cheese-like appearance.
(Food Nutrition and Health. 3(6); 1979; 1)

EQUIPMENT & MACHINARY

25 Positive rotary pumps

Pierre Gurein (France) sanitary positive rotary pumps are used for handling sensitive fluids of high or low viscosity, with or without solids in suspension, at a constant discharge capacity and pressure of up to 100 PSI (7 kg/cm^2) and a maximum temperature of 90°C. They are used for dairy, beverage, food, chemical, cosmetology and pharmaceutical products. The positive rotary pumps can be supplied with a speed drive motor. The rotor design and the low revolution speed allow for a regular transfer of sensitive products.
(Protein Foods and Nutrition Development Association of India. No.56; 1980; 3)

26 High-vacuum pumps

The two blades of the accentric rotar as they revolves, sweep the crescent-shaped volume of the container. Gas flows in the vaccum system to fill the space. The starovac high-vacuum oil-sealed rotary pumps work on the above principle and feature many salient points. Simple and trouble free they are streamlined for continuous operation and manufactured from materials that resist acid, and corrosive gases. It is employed in many applications, such as, vacuum distillation, dehydration and extraction, food preservation and canning, impregnation and encapsulation of electric & electronic components, vacuum metallizing, etc.
(Pustak Mandir. 2(9); 1980; 1)

27 Volumetric metering feeder

Simon-Solitec Ltd. of UK manufacture a screw feeder which can meter dry, semi-dry, powdered or granular materials to an accuracy of up to ± 1% which is said to be comparable to gravimetric or similar equipment. Named the Mark II volumetric metering feeder, the machine provides either intermittent or continuous output and is suitable for chemical, food, pharamaceutical, paint, plastic, cement and allied industries. Approximate capacities for flowing materials are from 1.2 to 800 litres an hour. Hopper capacities are either 45 or 90 litres and the hopper can be fed either manually or direct from a silo. The consistently high level of accuracy is due to an improved vibratory action which conditions the material, ensuring a homogenous density and therefore a steady, smooth feed to the screw. The feeder is available with alternative feed screw/discharge tube assemblies ranging from 6 to 50 mm inside diameter. It is therefore possible to fine-tune the machine and rerate it economically any time. Feed rate can be set at a preselected screw speed or varied over a 20:1 range either manually at the feeder or from a remote control panel. Alternatives include various types of drive arrangements, manufactured in stainless steel, and a choice of special finishes.
(Industrial Products Finder. 8(9); 1980; 61)

28 Portable drum rotators

Fabreeka portable drum rotators are for safe, fast and economical drum rotating. They can easily be removed from one job to another or steered into close quarters. Designed to provide safe, efficient handling of liquid loads up to 500 lb (227 kg), the rotator will handle up to 400 lb (181.6 kg) dry load at 10 RPM, 300 lb (136.2 kg) at 20 RPM and 200 lb (90.8mkg) at 40 RPM in standard guage and thin wall drums. It features all-welded construction. Adjustable idler wheels can be provided to accommodate smaller sizes of drums. A standard 1,750-RPM motor with reducer is included to give drum speed of 20 RPM
(Industrial Products Finder. 8(9); 1980; 25)

29 Planetary mixer

The planetary mixer (J.T. Jagtiani's) is for mixing pastes, creams, chocolate and for kneading dough in bakeries. All content parts are made out of 18/8 stainless steel. Sun-and-planet type beaters are included for effective mixing of products of different viscosities. The robustly built, heavy duty machine is for all-purpose use and suitable for rapid production. All rotating parts are mounted on ball bearings.
(Industrial Products Finder. 8(4); 1980; 69)

30 Vibro-mixer for industry/laboratory

Vibro-mixers for use in industry or laboratory for any process requiring stirring, mixing, dissolving, homogenising, emulsifying or gas dispersion have been developed in four models by Chemap AG, Switzerland. Model E is a laboratory kit equipped with a power unit and a well balanced selection of seventeen vibratory elements. It causes vertical vibrations of a variable amplitude up to a maximum of 3 mm. The vibrations are generated at the frequency of the alternating current supply. It can operate continuously for many weeks without oscilliation of the set amplitude and without overheating. The three industrial models (E_2, E_3, E_4) have a capacity of 10-150 litres, 50-800 litres and 500-50,000 litres, respectively for nonviscous liquids. These capacities necessarily vary according to the viscosity and consistency of the medium. The vibro-mixers operate efficiently with viscosity up to 70 cps. They have no rotating parts, no guides and no bearings and need no lubrication. They operate equally well in open or closed vessels and tanks. Industrial vibro-mixers are simply hung from a hook over open vessles. Where there is no sufficient space for the largest model (E_4) to be hooked overhead, a suspension frame is available to support it. To use them in closed tanks, three types of flanged membrane seals for different pressures made of durable, corrosion resistant material are available to be fitted to the stirrer which is fitted at the top of the tank. This is recommended for working under sterile conditions.
(Industrial Products Finder. 8(9); 1980; 63)

31 Dry powder mixer

Hitendra have developed a power-operated dry powder mixer (ribbon blender) for speedy mixing. Special features include tilting arrangement for easy unloading and automatic cut-off. These are heavy duty, noiseless, compact units. The mixer can be manufactured in 25 to 500 kg capacities to suit requirements, in mild steel or stainless steel (304, 316, 321, 316L) construction, with safety guards all over. Sliding lid is provided with safety grill for inspection and pouring the material. Required speed is achieved by using a suitable reduction gearbox and electric motor. Ribbon type or paddle type blades can be provided.
(Industrial Products Finder. 8(9); 1980; 22)

Homogenizers

The Pierre Guerin (France) ALM Line of homogenizers covers a range of output capacities, presently from 40 1/h to 15,000 1/h, soon to be extended to 30,000 1/h. Their different obturators make them suitable for laboratories, as well as pharmaceutical, cosmetics, chemical, dairy and food industries. Depending on the type of homogenizer and the product, the homogenizing pressure can be between 80 and 300 kg/cm^2. All parts which come in contact with the products are in stainless steel.
(Protein Foods and Nutrition Development Association of India Newsletter No. 51; September 1980; 2)

Hammer-type pulveriser

Jayems Miracle Mill is a hammer-type pulveriser used for making tea dust, cattle feed, chicken feed, fishmeal, spices, lentils, agricultural and pharmaceutical products, fertilizers, chemicals, minerals, cereals, coffee, tobacco, compressed cake, soapstone, china clay, detergent lamps, mica, sugar and coal 9 sizes are available.
(Protein Foods and Nutrition Development Association of India. No.46; 1980; 1)

Ball and pebble Mills

Crush ball and pebble mills are for continuous dry and wet grinding-cum-mixing of various types of chemicals, foods, dyes, pigments, etc. They are made out of 1.25 cm thick mild steel plates and are hermetically sealed. The full shell is mounted on anti-friction, self-aligning ball bearings. Round or square, leak-proof, charging and discharging doors are provided at the centre of the mill. The full assembly of the mill is so mounted on an extra-heavy fabricated stand that there is a clear distance between the discharge door and the ground of between 75 and 110 cm for easy discharge of material. Capacity ranges from 0.5 to 6,000 litres per batch.
(Industrial Products Finder. 8(4); 1980; 87)

Laboratory Centrifuges

Remi laboratory centrifuge Model T-8 A.B.C. is for biochemical and pathological laboratories and research institutes. It is proved with a solid-state speed controller, steplessly varied for smooth speed control up to 5,000 RPM. The T-8A is the basic unit, the T-8B has an additional electric speed indicator and the T-8C has additional timer switch of 0.60 minutes for automatic switching off. Maximum capacity is 4 x 50 ml and maximum centrifugal force is 3,250 x g.
(Protein Foods and Nutrition Development Association of India Newsletter No. 56; 1980; 5)

36 Table-top centrifuge high capacity

A versatile table-top centrifuge with increased capacity and maximum relative centrifugal force, the "Sorvall" GLC-4 offers performance capability of larger floor models. Features include: completely new H-1000 swinging bucket rotor; maximum speed of 6000 rpm; a 30-minute timer with hold provision for longer runs; an automatic dynamic brake for faster deceleration; and an automatic lid-latch safety system.
(Protein Foods and Nutrition Development Association of India Newsletter No. 51; September 1980; 2,3)

37 Heating mantles

Constructed to provide speciality curved heating surfaces. Expo heating mantles ensure efficient heating of round and flat bottomed flasks of different sizes. The mantles, it is claimed, can replace open heaters and is safe for heating under pack heat, conduction upto 450°C. Multimantles have two or three heating circuits allowing the upper circuit to be switched off, when smaller flasks are used or when the level of the liquid in the vessel drops. All mantles are fitted with a regulator for controlling the temperature. The mantles find applications in the laboratories and industries carrying out operations like digestions, distillations, extracting and fractionations and when organic solvents are handled.
(Pustak Mandir. 2(9); 1980; 1)

38 Heating tapes

Happy flexible electric heating tapes are for fuel oil lines, pipes carrying chemicals, bitumen, food products, and frost protection. They consist of an insulated resistance element fitted to a flexible, electrically-insulating base forming a complete heating circuit terminating at one end. The material to which the heating element is fitted varies with temperature and duty. Special features include: ease of application and robust construction. Various types have been developed to suit different applications and working conditions. Industrial glass cloth is used which stands up to a peak temperature of 550°C. However, the tapes are normally used for temperatures of up to 350°C.
(Industrial Products Finder. 8(9); 1980; 21)

39 Solar cooker

Recently a technoeconomic and more systematic study on the development of suitable solar cooker has been undertaken at Central Arid Zone Research Institute, Jodhpur and as a result five different types of solar cookers were designed, fabricated and field tested. Out of these five solar cookers, the solar oven is found best. This solar oven consists of a well

insulated semi-cylindrical box made of sheet aluminum and wood. Two shells are made and the space between them, 7.5 cm, is filled with fibre glass insulation. The interior shell is painted black. A door of the same insulating material is also made for keeping and taking out the food. The window (40 cm x 40 cm) of the oven consists of two transparent glass sheets (3 mm thick) with a spacing of 2.0 cm. Eight reflectors, made of silvered glass mirrors, four of square shape and four of triangular shape, have been used. The oven can be manually tilted and oriented towards the sun. A cradle like cooking platform is made in the oven which helps in keeping the vessel containing food horizontal irrespective of the sun. (Documentation Bulletin. No. 40; 1980; 14)

40 Laboratory cooker extruder

Bangalore Tool Works have introduced Model S40L laboratory cooker extruder for use of food laboratories, R & D institutions, food industries and agricultural universities. Applications include development and research work on cooker extrusion processes, new product development and allied work. The unit is reported to have been designed and manufactured with Indian conditions in mind and incorporates the necessary controls and meters for the scientist to monitor his work on the machine. Product trials can be carried out with as little as 2 kg material. The S40's standard features are: stainless steel barrels (hardened), screw, feeder mechanism and die; all-DC control and display systems; and easy access to all parts of the unit by opening 4 doors.
(Industrial Products Finder. 8(6); 1980; 1)

41 Heat recuperation system for spray dryers

Niro Atomizer of Copenhagen, Denmark, have announced a new air-to-air heat exchanger for recovery of waste heat from spray dryer exhaust air. The recovery of waste heat in air-to-air heat exchangers is a known technique but its use in spray dryers has been limited until now due to existing designs of heat exchangers being unable to handle air containing particulate material. Fine powder particulates that are always present in spray dryer exhaust air quickly foul conventional heat exchanger surfaces unless special designs of surface are applied. Niro Atomizer have developed such a design specially for spray dryer applications. The design is based upon the modular principle where each module consists of vertically mounted pipes.

The highlights of the design are: short tube length, and tube inlet designed for easy cleaning and increased running time between necessary wet clearning (tendency for powder build-up in tubes greatly reduced); CIP system incorporated for quick and easy washing; low pressure drop (50 mm WG on each side); all parts in contact with both clean and powder-containing air fabricated in stainless steel. Cleaning, where necessary,

can be conducted during dryer operation, thereby ensuring low uninterrupted production runs.
(Food Trade Review. 50(5); 1980; 251)

42 Solar dryer

The National Institute of Oceanography has developed a handy portable cabinet-type solar dryer of 100 x 50 x 35 cm size. The dryer, essentially made for economical drying of fish and other marine products, has also been found to be extremely efficient for drying agricultural farm products. For example, the unit can dry 50 large size coconuts in about 48 hours, compared with the traditional sun drying process which takes 7-9 days.

Other advantages of this solar gadget are: 1) the unit can be dismantled, packed and reassembled easily, 2) the design of the dryer is quite simple and can be fabricated by semi-skilled workers of rural areas and 3) the raw material for its fabrication is easily available. The estimated cost of the dryer is Rs. 500/- which can be considerably reduced when produced on commercial basis.
(NIO Newsletter. 2(3); 1980; 3)

43 Solar assisted banana drying in Tonga

A very simple process has been adopted by Real Food Ltd. for drying of banana. Heating of green fruits is done in a big polythylene tent, which is exposed to sunlight. A fan ensures circulation of the heated air in the tent. About 150 cases of green bananas can be dried at one time. However, for drying in rainy weather, Real Foods are considering the use of a modified copra drier which would use coconut husk as fuel.
(RCTT Technical Digest. 1(4); 1980; 6)

44 Solar energy assisted grape drier

A novel design for grape drying has been evolved by Dr. Birol Kilkis of the Middle East Technical University, Ankara, Turkey. The design consists of a two-dimensional fluidised-bed which also acts as a solar air heater. Grapes are loaded into the bed through the front glass, which can be opened easily. An air blower with 55 l/s capacity is actuated by a 1.2 hp (895 W) electric motor and the air is driven through the bed at a sufficient rate such that the special design permits the achievement of fluidisation in the bed. The high heat transfer rate, which is an inherent property of fluidised beds, decreases the drying period appreciably. The bed is so oriented that extra drying is obtained through direct radiation as well as heating the circulating air. Humid air is dried in the drying chamber and the same air is circulated in a closed loop for purpose of energy conservation. Extra solar air heaters can be incorporated in the

system for faster drying. The drying capacity is 50 kg of fresh grapes and the drying period is 40 hr. This is about a third of the time consumed in a conventional packed bed grape drier.
(RCTT Technical digest. 1(3); 1980; 10)

5 Fluid bed dryer

Alliance fluid bed dryer is for drying granulates and allied products in the chemical industries. Advantages include speed and uniformity of drying and continuity of production. The wet product passes into the drier and the drying process is completed within 20 to 30 minutes. A synchronous motor timer puts off the heaters a few minutes before the completion of the process. Driers with 500 kg/hr are available in 4 sizes.
(Industrial Products Finder, 8(4); 1980; 8)

6 Automatic tray filling machine

A 50-nozzle automatic tray filling machine has been introduced by the National Instrument Company to fill 50-cavity trays with culture media. All 50 cavities in each tray are filled simultaneously at the rate of 10 trays per minute, to provide a total production of 500 cavities per minute. The filamatic Model DAB-16/50 incorporates two master 260 cc capacity piston type metering pumps. The output of each pump is divided into 25 equal volumes by a special divider mechanism. The trays are transported on a variable speed conveyor, indexed one at a time and positioned under the nozzles by a patented, rotary type indexer. The volumes dispensed are easily adjusted by micrometer type control. The machine can be supplied with any length of conveyor to suit requirements.
(Protein Foods and Nutrition Development Association of India Newsletter. No. 56; 1980; 4)

7 Precision volumetric fillers

The volumetric filling machines by TI Bexuda Ltd., are designed for food, food oils, dairy and drinks industries. Pneumatically powered, the machines dispense precise volumes of liquids, creams, pastes and semi-solids at wide range of speeds to match production line requirements. Different types of product can be handled by a choice of filling nozzles, most with a range of quickly interchangeable nozzle tubes. The height of filling/spouts is adjustable to different size containers. Feed to the machine can be from overhead hopper, pumped supply line or suck-up from free-standing drums.
(Food Processing Industry. 48(577); 1979; 66)

8 Process equipment

Unifab Engineers have established a fabrication facility for pharmaceutical chemical plant process equipment. Pressure vessels, reaction vessels, storage tanks, heat-exchangers, and condensers can be fabricated to suit chemical plant requirements and designs. Unifab Engineers design, erect and fabricate plants

for small-scale industries on turnkey basis. They also fabricate materials handling equipment like screw conveyors, belt conveyors and elevators. (Protein Foods and Nutrition Development Association of India Newsletter. No. 56; 1980; 4)

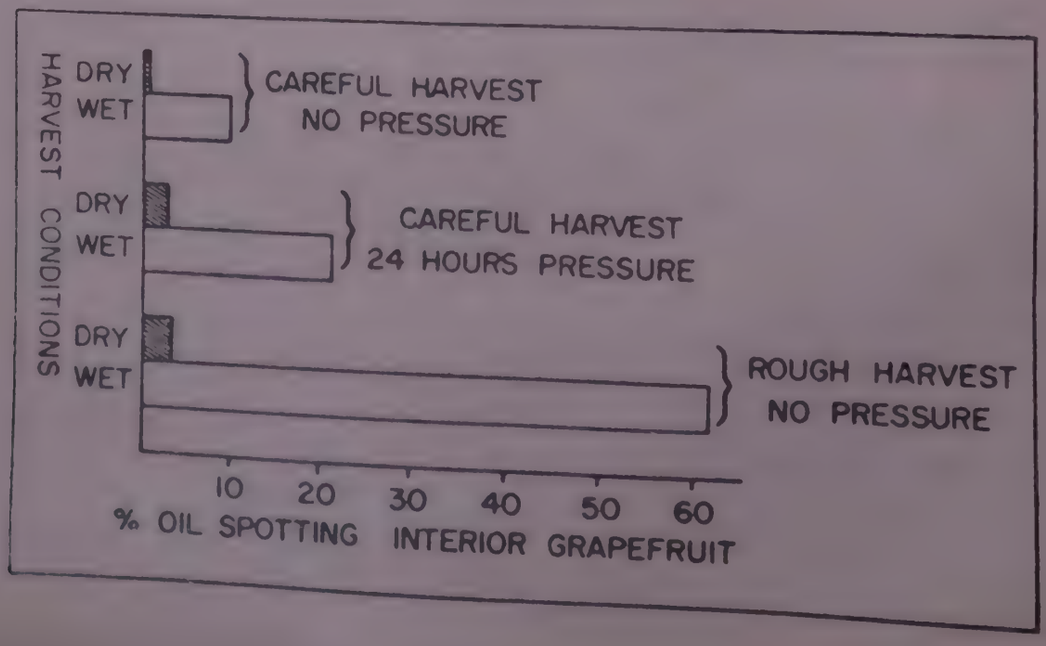
49 Kuality Ice Creamer

Asian Electric Works has developed a new product called Kuality Ice Creamer. It is possible to make super smooth ice-cream of our taste and choice at home with this. It consists of FHP motor of 20 watts designed to operate on 230 volts AC only and has half liter capacity. It is very easy to operate and can make ice-cream of our choice, taste and that too pure and hygienic. For more ice-cream spare sluminium containers are extra available. (Economic Times. Nov. 3, 1980; p 7)

PACKAGING

50 Harvesting and handling of grapefruit to overcome peel injury

Interior grown grapefruit were harvested monthly (9 harvests) during the 1978-79 season (1) with reasonable care and (2) roughly, by dropping to the ground from the tree followed by tossing into wooden boxes. The fruit received normal packing-house treatments of degreening (early in the season) washing, waxing and packing in cartons. Half of the carefully picked fruit were packed in over-filled wooden tomato crates with another crate holding a 50-lb weight on them for 24 hours. All fruit were picked early in the morning. Four pickings were made during damp or wet conditions, and five during dry conditions. The graph below shows percentage of grapefruit blemished oleocellosis (oil spotting) within a week following packing. There was little or no decay in any of this fruit which was stored for five weeks at 70°F (21°C) following packing.



It is best to harvest citrus fruit when dry and to handle it carefully to avoid oil spotting. Pressure on grapefruit after harvest, such as is sometimes done by overfilling cartons, can also increase oil spotting. (Packaging House Newsletter No. 105; September 21, 1979; 1)

51 Plastic corrugated board

Caprihans has introduced plastic corrugated packaging material that features lightness, water proofness, tear and puncture resistance, stiffness, as well as chemical and odour inertness. It is suitable for packaging food and non-food products. Called Sunpac, the material is available in the form of sheet or formed boxes in five colours and a natural translucent shade. Boxes made from Sunpac would stand deep freeze and high humidity conditions without collapsing or falling apart. Their cost effectiveness will be particularly significant when used for multi-trip duty. Applications include packaging electronic goods, frozen foods or pharmaceuticals, as light-duty tote boxes and crates. In sheet form, the material would find applications temporary shelter construction in agri and horticulture as also for outdoor advertising display.
(Protein Foods and Nutrition Development Association of India. No. 56; 1980; 1-2)

52 Packages for potato crisp

Metallized plastics films were compared with clear films to study the effect of the package material on delaying oxidation of potato crisps. Films compared were: 12 um 1-side metallized polyester/polyethylene laminate; ditto, but metallized both sides. PVDC-coated Cellophane/oriented polypropylene (PP) laminate; and single sheet of coextruded oriented PP. Storage was at 22°C/95% RH and at 38°C/95% RH for 33 days. Effects on moisture content of the crisps oxidation value of oil extracted from the crisps. taste changes on crisps made with and without antioxidants under the influence of light, and taste changes as a function of storage time and conditions are shown in graph and tabular form. Results confirmed that use of metallized films offers a secure method of delaying the onset of oxidative rancidity in potato crisps.
(Protein Foods and Nutrition Development Association of India Newsletter No. 41; January 1980; p 3)

53 Flex-can

A "Flex-Can" retortable pouch in bulk foods, designed to hold foods now packaged in No. 10 cans and bulk frozen foods, has been developed by Reynolds Metals Co. The bulk food size pouch is capable of holding from 16 to over 100 oz and, with a protective carton, is expected to prove less expensive for food processors than the No. 10 can and label. The "Flex-Can" bulk foods pouch's thin profile permits more efficient processing,

and food in the package does not require expensive freezing or refrigeration.

Additional savings can be achieved through space saving in storage and disposal and freight savings in distribution by elimination of much of the excess liquid in a product fill.

The thin profile of the "Flex-Can" permits reduction in processing time that results in foods that taste better than canned foods. Heat-sensitive nutrients are not affected as greatly, and food colour and texture are also superior in the "Flex-Can".
(Food Packaging and Labeling. 4(5); 1980; 3-4)

54 First to produce reclosable bag

What is said to be the first fully automatic vertical form-fill-and-seal machine that produces a reclosable bag, has been produced by Auto Wrappers Ltd in conjunction with Supreme Plastic. Called the Verso Flex , it is said to protect contents with a normal seal but to provide the consumer with the additional advantage of continuing to protect the product after the primary seal has been broken. It can be utilised in catering to save wastage or wherever the contents of the pack are required in partial quantities.

The feeds and applies a Lamigrip profile supplied by Supreme plastics, directly onto the bag material which is then formed into a bag. The contents are filled and sealed as in the normal Verso Flex machine.
(Food Flavourings Ingredients Packaging & Processing. 1(11); 1980; 49)

55 Strip-packaging machine

Hemson high-speed strip packing machine comes complete with automatic/semi-automatic feeding unit. It seals, cuts and packages capsule-shaped tablets, capsules, powder and supari in tens at the rate of 500/700/1,000/1,500 and 2,000/2,500 per minute.. Combination of 4 processes in a single machine reportedly makes the high-speed operation possible. For packaging, cellophane film, cellophane lamithene, aluminium foil, polyethylene film laminate or heat sealing paper can be used. Maximum foil width in Model GAB 71 is 140 mm and in Model GAB 72 it is 180 mm. Hemson private Ltd. manufacturers of the strip-packing machine, also supply batch number printing machine.
(Protein Foods and Nutrition Development Association of India. No. 156; 1980; 3)

56 Cap sealing machine

Delfa Engineers manufacture a semi-automatic R.O.P.P. cap sealing machine. It can take up bottles of up to 100 mm diameter, 5.08 cm to 30.48 cm in height. Seals range from 22 mm to 53 mm cap size. Pedal

operated, it can give up to 45 bottles per minute output speed, depending upon the skill of the operator. The simple-to-operate machine is driven by a 0.5-HP geared motor with friction clutch for isolation of the drive from the sealing head. The operator simply positions the bottle with a cap on the machine, and on pressing a foot-pedal, the sealing head covers down automatically to close the cap by the spinning rollers. Once the bottle is capped, the sealing head moves up automatically.
(Protein Foods and Nutrition Development Association of India No. 51; September 1980, 1)

57 Machine seals edible oils/cream in packs

Samarpan Fabricators offer their Prepac IS.2 oil machine for sealing edible oils, cream, juices and mineral liquids into strong, hygienic polythene packs. The entire operation is electronically controlled. The machine is capable of packing 1,000 pouches per hour with an accuracy of $\pm$ 2 g. Feeding pressure is 2 kg/cm^2 and the temperature of feeding varies from 18°C to 40°C. The film thickness is 110 microns and the width is 320 mm. Nitrogen injection system and date coding device are available. A UV tube sterilizes the film. The machine measures 2.40 m (height) x 0.60 m (width) x 0.80 m (depth) and weighs 360 kg (795 lb).
(Industrial Products Finder. 8(9); 1980; 37)

58 Hand-operated marking and printing machine

J.T. Jagtiani's hand-operated marking and printing machines print directly on flat surfaces like labels, and carton wrappers. The machine can be used to print on Bakelite, porcelain, plastic sheets, rubber, glass and leather. It can also print on round, square and uneven surface like tins, radio valves, capacitors, condensers, diodes and injection ampoules. Area of printing is 7.5 cm x 7.00 cm. The machine can print in any colour required. Applications include marking code numbers, manufacturing dates or packaging sizes.
(Industrial Products Finder. 8(9); 1980; 65)

ANALYSIS

59 Solid fat content determination in food

Housed in a low-profile roll-about cabinet, the Praxis SFC-900 is the first instrument to combine both the thermal and analytical requirements for solid fat measurement. An integrated approach to solid fat content determination in the food industry, as many as 20 samples can be processed at a time. No toxic reagents, special glassware, or water baths are needed.
(Protein Foods and Nutrition Development Association of India Newsletter No. 51, September 1980; 3)

60 Peroxidase test for blanching

Peroxidase is a fairly heat stable enzyme system and its absence is often used as an indicator of blanching efficiency. However, there is some concern amongst freezers that the heat treatment required to inactivate peroxidase could be an overblanch in some cases.

As a result of recent research at the Campden Food Preservation Research Association it now looks as though a proportion of peroxidase can be left in when blanching peas, sliced green beans and carrots, and they still have a shelf life of 18 months when stored at -20 or -25°C. In sliced green beans the enzyme lipoxygenase appears to be more related to the loss of flavour acceptability than peroxidase. At this time efforts are being made to find a rapid test to allow for the checking of this enzyme at the factory level. It was also found that steam peeling is sufficient heat treatment to stabilise the sensory qualities of carrots although not all the peroxidase had been inactivated.
(Food Trade Review. 50(5); 1980; 259)

61 Spectrophotometer

Elico Ultra-Spec Model CL-54 spectrophotometers have a range extending from the ultraviolet to near infrared, i.e., 200-900 nm, with a resolution of 0.5 nm. The instrument is supplied in two units: the monochromator and the power supply, which are connected by a multi-core cable. The monochromator has a Czerny-Turner mounting employing a well corrected and high resolution plane reflecting-type grating. The grating moves over a turntable, and the moment is controlled by a multi-cam for accurate, high resolution scale. The scale is graduated at 1 nm interval and is spread over a length for clarity. The entrance and the exist slits are coupled and can be operated simultaneously for adjusting the slit width, continuously from 20 microns to 800 microns. A separate mechanism controls the slit length. The monochromator is supplied with a filter to cut off the second spectrum from interfering with the first order. It is provided with a cell container to take four quartz cuvettes, one for the control sample and the others for simultaneously measuring the optical densities of samples with different concentrations. The power supply unit provides stabilised power to the lamps (UV lamp and a tungsten filament lamp), the photomultiplier tube and the amplifier. The instrument is supplied with 4 quartz cuvettes, one order cut off filter, a manual and covers.
(Protein Foods and Nutrition Development Association of India Newsletter No. 56; 1980; 4)

62 Densitometers for food and beverage industry

A number of major European breweries are now using an automated

system of wort gravity control which could have applications elsewhere in the food and beverage industry. In many breweries wort breakdown is manually controlled with final gravity being checked by a small span hydrometer. However, quality control can be improved by introducing automation and in particular by using density transducers, feeding information into a process control computer which also receives temperature and pressure signals.

Solartron, the UK manufacturers of density transducers and process control computers have supplied this type of equipment to several breweries. In order to ensure high flow velocity through the transducer and to prevent the build up of contaminants a 5000 litre per hour pump is required in the sample loop.

Density signals from the Solartron 1762 transducer together with temperature signals (from two 100 ohm platinum resistance transducers) and 4 to 20 m pressure signals are fed into a Solartron process control computer.
(Food Technology in New Zealand. 15(2); 1980; 39)

53 Measure oil, fat and moisture

The MK III-A quantity analyser manufactured by Newport Instrument Ltd., UK, is a continuous wave, nuclear magnetic resonance spectrometer for determination of oil and moisture content in agricultural and food prodcuts. The wide line NMR method has been used as a replacement method for solvent extraction in measuring the oil and fat content of oil seeds, chocolate, meat and other materials. Other applications include determination of moisture in grain, flour, dough and finished cereal products. The analyser is also used for monitoring solid/liquid fat ratio in margarine and edible fat during production and storing.
(Protein Foods and Nutrition Development Association of India. No. 56; 1980; 1)

54 Precision trace metal analyzer

For precise trace metal determinations, the STRIPTEC trace metal analyzer uses a new technology that gives a large dynamic measuring range with no special preparatory steps. Capable of simultaneous measurements of several metals with high precision at low concentrations - ppb levels. Typical applications: tap water; waste water; sea water; beverages; and urine. In combination with Tecator's programmable Digestion Systems for multisample preparation, it can be used to measure metals in food materials.
(Protein Foods and Nutrition Development Association of India Newsletter No. 51, September 1980; 3)

65 Automatic gluten washer

Sigma automatic gluten washer is a laboratory instrument used for determination of gluten content of wheat flour. Amount of gluten that can be extracted from wheat flour is one of the most useful indications of flour strength. Hand washing is an outdated practice as the results are inconsistent due to uncontrolled factors such as amount of kneading of the dough and quantity of water used. Sigma automatic gluten washer eliminates human error. The machine has a kneading drum and a spring-action rotor. The drum remains fixed on the body of the machine and the rotor is driven by a reduction geared motor. A timer controls the duration of washing period. Water is fed into the chamber through a feed pipe. Gluten collected at the base of the drum after the motor is switched off by the timer is rinsed under water tap and weighed.
(Industrial Products Finder. 8(4); 1980; 59)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

56 All India First Estimate of Bajra 1980-81

(Production in thousand tonnes)

STATE	1980-81 (First Estimate)	
Andhra Pradesh	456.6	(T)
Gujarat	1212.0	(T)
Haryana	919.0	(T)
Jammu & Kashmir	17.0	@
Karnataka	430.0	
Madhya Pradesh	218.7	(T)
Maharashtra	1733.5	(T)
Orissa	9.5	@
Punjab	60.0	(T)
Rajasthan	4993.0	(T)
Tamilnadu	144.5	
Uttar Pradesh	989.0	(T)
West Bengal	0.6	@
Delhi	9.3	@
All India	11192.7	

@ - Last year's data repeated in the absence of information for the current year.

(T) - Data based on Timely Reporting Scheme.

NOTES : 1. Bihar and Pondicherry report data for the final estimate only.

2. Bajra is not grown to any appreciable extent in States/Union Territories not mentioned above.

(Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi.)

67 Relative shares of states in production of pulses - 1978-79 (Per cent)

STATES	GRAM	TUR	MUNG	URAD	KULTHI	MOTH	LENTIL (Masur)	LATHYRUS (Khesari)	Other pulses
Andhra Pradesh	0.3	2.3	15.6	11.6	11.3	-	-	-	1.1
Assam	-	0.2	0.5	2.4	-	-	1.4	0.8	0.4
Bihar	2.1	3.0	5.4	6.8	7.1	-	20.1	39.9	4.2
Gujarat	1.0	3.9	5.8	2.7	0.2	4.6	-	-	1.6
Haryana	17.8	0.4	0.4	0.7	-	0.4	2.9	-	0.9
Himachal Pradesh	0.4	-	-	0.9	0.3	-	-	-	0.5
Jammu and Kashmir	-	-	0.8	1.5	0.2	4.6	0.2	-	0.7
Karnataka	1.3	10.2	3.6	1.6	33.0	-	-	-	4.0
Kerala	-	-	0.1	0.2	1.0	-	-	-	3.8
Madhya Pradesh	19.0	16.4	6.3	20.4	7.8	-	26.4	42.5	2.9
Maharashtra	2.7	21.0	16.5	21.5	10.5	18.7	1.1	4.4	0.8
Orissa	0.4	2.0	35.6	-	21.2	-	-	-	30.0
Punjab	4.8	0.2	0.2	1.7	-	0.3	1.8	-	0.2
Rajasthan	27.2	0.7	3.4	4.9	-	70.6	2.6	-	6.8
Tamilnadu	0.1	2.5	3.7	9.8	7.1	-	-	-	1.5
Uttar Pradesh	21.7	36.7	0.5	6.2	-	0.7	33.2	-	33.9
West Bengal	1.1	0.4	1.2	7.1	0.3	0.1	10.3	12.4	0.6
Others	0.1	0.1	0.4	-	-	-	-	-	6.1
All India	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note : '-' indicates nil or negligible.

(Economic Times : 10th September, 1980; p 12)

68 Production of soybean & sunflowerseed in India

(Quantity in Thousand Tonnes)

Year	Soyabean	Sunflower
1977-78	160	250
1978-79	220	280*
1979-80	250	300*

*Estimated

(Oils and Oilseeds Journal, 32(4); 1980; 23)

69 Area, Production and Yield of Groundnuts in India

Year	Area (Thousand Hectares	Production (Thousand Tonnes)	Yield (Kg. Per Hectare)
1970-71	7326	6111	834
1971-72	7510	6181	823
1972-73	6990	4092	585
Average for triennium ending 1972-73	7275	5461	747
1973-74	7024	5932	845
1974-75	7063	5111	724
1975-76	7222	6755	935
Average for triennium ending 1975-76	7103	5932	834
1976-77	7043	5264	747
1977-78	7175	6069	846
1978-79	7548	6387	862
Average for triennium ending 1978-79	7255	5906	818

(Oils and Oilseeds Journal. 32(4); 1980; 24)

70 All India final estimate of black pepper, 1979-80

State	Area (Thousand hectares) 1979-80	Production (Thousand tonnes) 1979-80
Karnataka	3.68	1.00
Kerala	80.79	20.88*
Tamilnadu	0.43	0.09
Pondicherry	0.01	0.01
All-India	84.91	21.98

* - Based on results of crop-cutting surveys.

Notes : Kerala state has recorded some increases in area and production during 1979-80 as compared to 1978-79. Crop-cutting surveys for objective estimation of black pepper were organised in the State of Kerala. The State accounts for 95.1 per cent and 95.2 per cent of the total area and 95.0 per cent and 95.0 per cent of the total production of black pepper during 1979-80 and 1978-79 resp.

(Agricultural Situation in India. 35(2); 1980; 157)

71 Rice Bran Oil Output Increases

The Production of rice bran oil has picked up the total being as much as 101,000 tonnes as against 23,000 tonnes only in 1974-75. Considering the current pace of the growth it seems that production would be 110,000 tonnes in 1979-80.

A process to hydrogenate rice bran oil has been developed. As a result the oil is being now used by the soap industry in place of mutton tallow which was imported. Now the demand for hard fat by the organised sector of the soap industry is more or less being satisified by hydrogenated rice bran oil.

A large capacity for hardening of rice bran oil has already been established. Now that the bulk of the requirements of hard fat of both the sectors of soap manufacturers can be met from the indigenous sources there is hardly any need for importing industrial palm oil for manufacture of soap and mutton tallow for the small scale sector of soap manufacturers. (Oils and Oilseeds Journal. 32(4); 1980; 5)

72 All India final estimate of coriander - 1979-80

State	Area (Thousand Hectares) 1979-80	Production (Thousand tonnes) 1979-80
Andhra Pradesh	109.2	31.3
Bihar	6.0	3.5
Haryana	0.4	0.2
Karnataka	22.7	2.5
Madhya Pradesh	36.6	7.7
Orissa	15.3	6.8
Rajasthan	43.5	23.8
Tamilnadu	61.9	24.7
Uttar Pradesh	8.0	4.8
All India	303.6	105.3

Notes : 1. No information regarding crop estimates is yet available from the Govt. of Sikkim.

2. Coriander is not grown to any appreciable extent in States and Union Territories not mentioned above.

(Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi.)

73 Production of guar seeds (1973-74 to 1977-78)

(Thousand tonnes)

State	1973-74	1974-75	1975-76	1976-77	1977-78
Gujarat	93.7 (12.3)	3.6 (1.2)	39.8 (5.3)	40.1 (3.6)	44.3 (4.7)
Haryana	75.9 (10.0)	83.8 (27.3)	130.4 (17.5)	128.2 (11.5)	166.8 (17.7)
Punjab	132.7 (17.5)	95.6 (31.2)	97.6 (13.0)	86.0 (17.7)	46.1 (4.9)
Rajasthan	414.8 (54.6)	120.0 (39.1)	476.2 (63.8)	854.7 (77.0)	683.3 (72.6)
U.P.	43.3 (5.7)	3.8 (1.2)	2.6 (0.3)	1.0 (0.1)	1.3 (0.1)
Total	760.4	306.8	746.6	1110.0	941.8

(Figures in brackets denote percentage of total production)
(Economic Times. 24th September, 1980, p 12)

74 Edible oil industry

The edible oil industry has offered the Government its co-operation in the field of Research and Development of oilseeds in the country.

The Vanaspati Manufacturers' Association of India (VMAI) has set up a Rs. one crore special trust fund to carry on extensive research and field experiments throughout the country for augmenting production of oilseeds.

Explaining the purpose of such a trust, Mr. B.K. Swaika, Chairman of the Central Organisation for Oil Industry and Trade, said that the industry would undertake and sponsor research in various aspects of the cultivation of oil bearing seeds, fruits, plants and materials.

To disseminate among the cultivators information about improved techniques of cultivation, extension activities would also be undertaken, he said. Besides the multiplication of improved varieties of seeds and distribution thereof, demonstration of improved techniques of cultivation would be sponsored.

According to Mr. Swaika, the fund will also undertake and in some cases, if necessary, sponsor agricultural engineering for the development of tools and implements. This apart, the industry intends to undertake extension and development activities for increasing production of vegetable oils. Some progress has reportedly been made in this direction.

The fund would also set up farms in different parts of the country to sponsor scientific and technological research in utilising products of oil-bearing seeds and fruits.

According to an estimate, the demand for edible oils during the current year will be about 4 million tonnes against which 2.7 million tonnes will be available indigenously. Hence, to meet the full requirement, the country will have to import about 1.3 million tonnes of edible oils. The estimated demand includes 7.50 lakhs tonnes for the vanaspati industry, 4.50 lakh tonnes for the soap industry and 1 lakh tonnes for the paint industry. The household consumption is estimated at 2.7 million tonnes.

According to a conservative estimate, the demand for edible oils at the end of the Sixth Five Year Plan will be about 4.8 million tonnes and the short fall in indigenous production will be about 2 million tonnes unless production catches up.

The edible oil import bill this year was likely to be in the range of Rs. 650 crores to Rs. 700 crores.

The industry has come forward with a proposal that in areas where cultivation of edible oilseeds was a new venture, it would purchase the entire production at a minimum support price. If farmers could get a higher price, they could take advantage of that. For example, in Barasat in the district of 24-Parganas, West Bengal, farmers were given free know-how, chemicals and seeds. Recently, they sold seeds in the open market at Rs. 375 per quintal against the industry's support price of Rs. 300 per quintal. (Oils and Oilseeds Journal. 32(4); 1980; 5)

PRODUCTION (INDUSTRIAL)

5 Alcohol yield of selected crops

Crop	Crop Yield Per Hectare	Alcohol Yield	
		Per Hectare	Per Acre
	(Metric Tons)	(Liters)	(Gallons)
Sugarcane (Brazil)	54.2	3,630	388
Sweet Sorghum (US)	46.5	3,554	381
Corn (US)	5.7	2,200	235
Cassava (Brazil)	11.9	2,137	228
Grain Sorghum (US)	3.5	1,362	146
Wheat (US)	2.1	773	83

Source : Food and Agricultural Organisation, U.S. Department of Energy, Office of Technology Assessment, U.S. Department of Agriculture.

(Documentation Bulletin No. 40; 1980; 30)

6 Estimated Requirements of Edible Oils & Oilcakes in India

(Quantity in lakh tonnes)

Year April-March	Edible Oils	Oilcakes

Bread, in India, is manufactured by large, medium and small scale units. However, there are no official data available about the share of the various sectors in the manufacture of bread. In 1978, there were 19 units in the organized sector. Position of the unorganized sector is not known. It is estimated that there are about 15 to 20 thousand small bakery units in the country. These units produce bread loaves of different sizes to meet the purchasing power of the low income people.

In 1972, the installed capacity of bread industry in the organized sector was 78,000 tonnes which rose to 90,000 tonnes by 1978. The annual growth rate in the capacity was over 2%. The capacity utilization improved from 88.7% in 1972 to 105.6% in 1978.

During 1972-78, total production of bread in the organized sector expanded from 69,000 tonnes to 95,000 tonnes. The average production/unit was 5,000 tonnes. Thus, the rate of growth was about 5% per annum. From 1978 to 1979 production of bread registered an increase of 10.5%, which may be attributed to better offtake by consumers and improvement in quality and availability.

Installed capacity, capacity utilization and production of bread in the organized sector

	Installed capacity (in tonnes)	Capacity utilization	Production (tonnes)
1977	83,200	103.7	86,300
1978	90,000	105.6	95,000

The average production in the unorganised sector is 200 tonnes of bread/yr. Assuming that there are 20,000 units, the total production in the unorganized sector may be about 40 lakh tonnes.
(Industrial News Digest. 3(10); 1980; 5)

'8 Solvent Extraction Units in India as on 1-3-1980

(Processing Capacity in Tonnes)

State	Units	Oilcakes	Rice Bran
Gujarat	45	16,12,500	60,000
Maharashtra	28	10,77,000	3,75,000
Andhra Pradesh	42	10,23,000	6,03,000
Punjab	20	5,73,000	2,97,000
Karnataka	16	3,58,500	1,47,000
Madhya Pradesh	14	3,45,000	1,33,500
Uttar Pradesh	13	2,53,500	1,12,500
Tamilnadu	9	1,80,000	84,000
West Bengal	9	1,66,500	82,500
Haryana	6	1,09,500	76,500
Orissa	6	82,500	16,500
Rajasthan	3	66,000	43,500
Bihar	4	48,000	15,000
Kerala	4	43,500	21,000
Assam	3	21,000	6,000
Pondicherry	1	13,500	9,000
Total - India	223	59,73,000	20,82,000

(Oils and Oilseeds Journal. 32(4); 1980; 26)

EXPORTS AND IMPORTS

79 Export of Guar-gum (1974-75 to 1979-80)

Year	Quantity (tonnes)	Value (Rs. crores)	Unit value realisation (Rs.)
1977-78	56,307	19.06	33.85
1978-79	52,660	21.85	41.49
1978-79 (Apl.-Dec.)	39,389	15.12	38.39
1979-80 (Apl.-Dec.)	26,652	14.68	52.83

(Economic Times 24th September, 1980; p 12)

80 Mango juice export

The Government has announced the minimum FOB prices for export of mango juice. The export of mango juice had already been allowed under the OGL-3 scheme.

According to a public notice of the Export Trade Control, the minimum price will be Rs. 78 for a case of 24 x 850 gms, Rs. 82 a case of 24 x 450 gms and Rs. 40 for a case of 48 x 170 gms.
(Financial Express, 12th September, 1980; p 7)

81 Biscuit Production and Export

Biscuits production in India (Organised Sector) in tonnes

1976	73,640
1977	92,320
1978	95,515
1979	159,500
1980 (till Sept.)	84,797

Biscuit Exports from India

Year	Quantity (tonnes)	Value Rs. Lakhs
1975-76	2214.3	174.55
1976-77	3727.1	283.72
1977-78	4224.8	301.18
1978-79	4011.6	302.62
1979-80	4811.2	377.56

(Economics Times 26th January, 1981, p 4)

82 Imports of Edible Oils into India

Year	Quantity (Lakh Tonnes)	Value (Rs. crores)
1976-77	1.69	99.91
1977-78	12.84	7[illegible].69
1978-79	10.40	5[illegible]5.41

(Oils and Oilseeds Journal 32(4): 1980; [illegible])

FOOD REGULATION, QUALITY CONTROL & HYGIENE

REGULATION

83 Hydrogen peroxide uses in foods banned in Japan

The Japanese Ministry of Health and Welfare has recommended total ban on the use of hydrogen peroxide in foods, because of the possibility of cancer hazards. The demand for H_2O_2 in food processing industries has mounted to about 2,500 tons (in terms of 100% purity) per annum (equivalent to 3.5% of the total annual demand). In Japan, hydrogen peroxide was used extensively in boiled fish paste and noodles to keep them fresh and white.
(Indian Chemical Journal. 15(5); 1980; 21)

84 Minimum level for nitrosamines in beer

FDA has established an action level of 5 ppb for dimethylnitrosamines (DMNA) in malt beverages, including beer. This is the lowest level at which the presence of DMNA in malt beverages can be determined by reliable methodology. Most malt processors have modified their kilning procedures to reduce the formation of DMNA. An FDA survey found an average of less than 1 ppb of nitrosamines in domestic beer and about 1 ppb in imported beer this year, compared to 3.4 and 4.9 ppb, respectively, last year. Details are in

the Federal Register of June 10.
(Food Technology. 34(8); 1980; 99)

5. FDA approve antioxidant

Hostanox O 3, a phenol based compound developed by Hoechst as an antioxidant for polyolefins, has been approved by the American FDA for use in polyethylene and polypropylene materials intended for foodstuffs packaging. The maximum permitted levels of use are: polyethylene 0.2% and polypropylene 0.5%.
(Chemical Age. 4th April 1980; 11)

6 Apple Grading and Marking Rules

1. Short title and application - (1) These rules may be called the Apples Grading and Marking Rules, 1980.

   (2) They shall apply to apples produced in India.

2. Definitions - In these rules --

   (a) "Agricultural Marketing Adviser" means the Agricultural Marketing Adviser to the Government of India;

   (b) "Schedule" means a Schedule appended to these rules;

   (c) "Authorised Packer" means a person or a body of persons who has been granted a Certificate of Authorisation by the Agricultural Marketing Adviser, for getting the commodity graded and Agmarked in accordance with grade standards and procedure prescribed under the rules;

   (d) "Certificate" means the Certificate of Authorisation issued by the Agricultural Marketing Adviser to the Government of India.

3. Grade designations -- The grade designation to indicate the quality of the apples shall be as set out in column 1 of Schedule I.

4. Definition of quality -- The quality indicated by the grade designations shall be as set out against each grade designation in columns 2 to 6 of Schedule I.

5. Grade designation mark -- The grade designation mark shall consist of a label specifying the grade designation and bearing a design (consisting of an outline map ofIndia with the word "AGMARK" and figures of the rising sun with the words "Produce of India") resembling the mark as set out in Schedule I

6. Method of marking -- (1) The grade designation mark shall be securely affixed to each case/package in a manner approved by the Agricultural Marketing Adviser

   (2) In addition to the grade designation, the following particulars shall also be clearly marked on the label --

   (a) Name of variety,
   (b) Net weight,
   (c) Name of packing station,
   (d) Date of packing, and
   (e) Any other particulars as may be specified by the Agricultural Marketing Adviser from time to time.

   (3) The authorised packer may, after obtaining the prior approval of the Agricultural Marketing Adviser, mark his private trade mark on a container in a manner approved by the said officer, provided that the private trade mark does not represent a quality or grade of apples different from that indicated by the gradedesignation mark affixed to the container in accordance with these rules.

Method of Packing -- (1) Apples shall be packed in wooden cases or such other type of containers and in such manner as may be specified from time to time by the Agricultural Marketing Adviser;

(2) Packing material shall be soft, clean and dry, and free from fungus, insect attack, obnoxious smell or any taint liable to affect the quality of apples;

(3) Each package shall contain apples of the same variety and of the same grade designation.

(4) Each container shall be securely closed and sealed in the manner specified by the Agricultural Marketing Adviser.

Special conditions for certificate -- In addition to the conditions specified in rule 4 of the General Grading and Marking Rules, 1937, the following special conditions shall be observed by the packers to the satisifaction of the Agricultural marketing adviser, namely :-

(i) An authorised packer shall make such arrangements for testing apples as the Agricultural Marketing Adviser may specify by general or special instructions from time to time.

(ii) An authorised packer shall provide such facilities to the Inspecting Officers duly authorised by the Agricultural Marketing Adviser in this behalf as may be necessary for them to discharge their duties under these rules.

SCHEDULE I

(See rules 3 and 4)

Grade designation and definition of quality of apples produced in India

Grade designation	Definition of quality — Special characteristics				General characteristics
	Size, Minimum Diameter in mm	Development of colour, characteristics of the variety Minimum per cent	Blemish content Maximum per cent	Taste and texture	
1	2	3	4	5	6
Super Special I	80	90	Negligible	Sweet in taste, Soft in texture	1. The fruits shall be firm, reasonably developed and in good condition.
Super Special II	70	90	-do-	-do-	2. The fruits shall have reached a stage of maturity which will permit the subsequent completion of ripening in the ordinary cosure of transport and marketing. 3. The fruits shall be reasonably uniform in colour and shape characteristics of the variety. 4. Windfalls are shrivelled fruits shall not be packed. 5. The fruits shall be free from fungus and insect attack and blemishes including mechanical injury except to the extent as specified under column 3.
Super Special III	60	90	-do-	-do-	
Super Special IV	50	90	-do-	-do-	
Special I	80	75	5	-do-	
Special II	70	75	-do-	-do-	
Special III	60	75	-do-	-do-	
Special IV	50	75	-do-	-do-	
Choice I	80	50	10	Sweet in taste, Medium to soft in texture	
Choice II	70	50	-do-	-do-	
Choice III	60	50	-do-	-do-	
Choice IV	50	50	-do-	-do-	
Commercial I	80	30	15	Sour/sour to/sweet in taste, medium to hard in texture.	
Commercial II	70	-do-	-do-	-do-	
Commercial III	60	-do-	-do-	-do-	
Commercial IV	50	-do-	-do-	-do-	

Note : To allow for accidental errors in grading, a tolerance of 5 per cent of apples of the next lower grade will be allowed in all cases.

Definitions : 1. Size refers to the largest dimension of the fruit taken at right angle to the straight line running from stem to blossom end.

2. Colour means skin pigment of the fruit characteristic of the variety.

3. Blemish shall include superficial discolouration due to insect and fungus attack, damage due to bruising, bird picking or mechanical injury, hail mark or any other defect materially affecting the quality.

(Gazette of India Part II, Section 3, Sub Section (i); 28th June 1980; p 1421-1423)

87 Amendment to PFA Rules

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1980.

2. (i) In rule 42 of the said rules, for the clauses (O) and (P), the following shall be substituted, namely --

"(O) Every package containing an admixture of imported refined edible oil with indigenous Expeller processed oil as permitted under Rule 44 shall carry the following label :

BLENDED OILS

This admixture contains Refined.....(Name of Oil) (imported).....per cent and..... (Name of Oil).....(indigenous).....per cent ",

(ii) In rule 44, for second and third proviso the following shall be substituted, namely :-

"Provided further that the prohibition in Clause (e) shall remain inoperative for a period of 5 years from the date of publication in respect of the following admixtures :-

(a) Refined imported soyabean oil with indigenous raw expeller processed groundnut oil, where proportion of groundnut oil shall not be less than 30 per cent and not more than 50 per cent by weight.

(b) Refined imported rapeseed oil with indigenous raw expeller processed mustard oil, where proportion of mustard oil shall not be less than 10 per cent and not more than 20 per cent by weight:

Provided also that the oils used in the admixtures shall conform to the standards prescribed for such oils. These admixtures shall also conform to the following standards :-

(i) Moisture	Not more than 0.25 per cent by weight.
(ii) Free Fatty Acids (as oleic acid)	Not more than 1.0 per cent by weight.
(iii) Unsaponifiable matter	Not more than 1.5 per cent by weight."

The admixtures shall be processed and sold by the Department of Civil Supplies of the Central Government or their authorised agents.

(Gazette of India - Extraordinary - Part II, Section 3, subsection (i); 11th September, 1980; 1014)

QUALITY CONTROL

88 Water pollution in Bombay

Fish, milk and a vegetable called the cluster bean, widely sold in Bombay contain an excessively high level of toxic mercury. Other heavy metals such as lead, cadmium and copper are also present in alarming quantities in the vegetable. Effluents released by various industries into the river systems around Bombay, though within the permissible limits, are the source of the metal pollution of food in the city. These are the findings of two scientists, B. Tejam and B. Haldar of the Institute of Science, Bombay, who studied the ecosystem of a nearby river, the Kalu, a source of water for metropolitan Bombay, and of fish available in the city.

A survey made of 8.5 Km of the banks of the Kalu shows little diversity of plant and aquatic life in and around the river, particularly after the spot where industrial effluents are released. In the Ambivali region, near Kalyan, water is often brown and fishing is no longer possible, although a few small crabs and worms survive. In fact, the only plants that survive on the banks of the river, besides grass and weeds, are cluster beans.

Studies reveal that the river waters are no longer suitable for continuous irrigation of the fields nearby, done during the dry season. 'Biomagnification' takes place, that is the plant species not only continuously absorb heavy metals but also retain them in ever increasing concentrations.

The immediate danger to humans lies in the pods of cluster beans sold as vegetables in the Bombay markets, and in milk from the cattle that graze on the river banks. This milk is distributed throughout the surrounding region. The pods of cluster beans contain, on average, 1.04 parts per million of mercury and 10.7 of copper.
(Food Technology in New Zealand. 15(5); 1980; 4)

HYGIENE

89 Artificial Sweeteners may Increase Cancer Risk for Heavy Users, Heavy Smokers

Preliminary results of a $1.5 million epidemiology study conducted for FDA by the National Cancer Institute indicate that although there was no increased risk of bladder cancer among users of artificial sweeteners in the overall study population, there was increased risk of certain groups. People who were heavy users of artificial sweeteners (6 or more servings of a sugar substitute per day or 2 or more 8 oz diet beverages per day) showed

a 60% increase in risk of bladder cancer. People who were heavy smokers (2 or more packs per day) and heavy users of artificial sweeteners showed a greater risk of bladder cancer than heavy smokers who did not use artificial sweeteners. Women who would normally be at low risk of bladder cancer but who consumed sugar substitutes or diet beverages 2 or more times per day had a 60% greater risk of bladder cancer than similar women who never used artificial sweeteners. The authors of the study concluded that while saccharin and cyclamate are not strong carcinogens, they should be regarded as potential risk factors for human bladder cancer, the sixth most common form of cancer in the U.S. The NCI study comprised interviews with more than 3,000 bladder cancer patients and almost 6,000 people from the general population who did not have cancer but were similar in age and sex.
(Food Technology, 34(2); 1980; 97)

TRANSFER OF TECHNOLOGY & NEW INDUSTRIES

90 Rural food processing centres

The Food and Nutrition Board, Govt. of India has proposed to set up rural food processing centres one each in Uttar Pradesh, Delhi, Tamilnadu, Kerala and Tripura. The centres will focus attention on development of technology suited for the particular area based on the traditional practices in the village for fruit and vegetable processing. They will assist the rural people in effective post-harvest handling of the food commodities they produce to ensure them better marketing and development of products with higher value.
(Documentation Bulletin. No. 40; 1980; 2)

91 Energy from coconut husk

Plans are currently under way to set up three coconut-processing and power-generating plants in the Philippines, with the first of these (1,500 Kw capacity) scheduled to become operational in 1980. Five kilos of coconut husk can generate power to run a one horsepower engine for one hour at half the cost of charcoal-based thermal power.

A factory which processes 2,200 coconuts an hour into oil and other products has enough coconut waste to run a 1,500 Kw power station. The coconut wastes are burned by a downdraft air blower in to a simple tank which produces carbon dioxide and carbon monoxide gas, leaving behind a "distillate" of water and tar. The gas is then burned to fire up a boiler which in turn produces steam to run a power turbine.
(Documentation Bulletin. No. 40; 1980; 20-21)

92 Technology club

A transfer of technology club is being set up in India to act as a clearing house of ideas for the acceleration of the development of the Third World countries.

The project has the blessings of the Government and the Prime Minister has hoped that the proposed club will lead to "clearer thinking in this complicated field."
(Indian Express. 8th September 1980; p 8)

PERSONALIA

93 CSIR Society Reconstituted

The Society of Council of Scientific and Industrial Research has been reconstituted with effect from 6 June 1980 for a period of two years, and consists of the following :

President :

Prime Minister

Vice President :

Prof. S. Nurul Hasan

Members :

Shri Vasant Sathe
Minister of Information and Broadcasting
Government of India
New Delhi.

Shri N.D. Tiwari
Minister of Planning and Deputy Chairman
Planning Commission
Government of India
New Delhi

Dr Charanjit Chanana
Minister of State for Industry
Government of India
New Delhi

Prof. Satish Chandra
Chairman
University Grants Commission
Bahadur Shah Zafar Marg
New Delhi

Dr C.S. Jha
Educational Adviser (Technical)
Ministry of Education
Shastri Bhawan
Government of India
New Delhi

Dr. O.P. Gautam
Director General
Indian Council of Agricultural Research
Krishi Bhawan
New Delhi

Dr V. Ramalingaswamy
Director General
Indian Council of Medical Research
New Delhi

Dr Abad Ahmed
Professor
Delhi School of Management and Director, South Delhi University Campus
New Delhi

Shri K.C. Khanna
Chairman-cum-Managing Director
Kudremukh Iron Ore Ltd
25 Mahatma Gandhi Road
Bangalore

Shri J.R.D. Tata
Chairman
Tata Industries Ltd
Bombay House
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Members (contd.)

Dr Raja Ramanna
Secretary
Department of Defence Research & Development
Ministry of Defence
South Block
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Dr R.N. Dogra
Kothi No. 4
Sector 5
Chandigarh

Dr Yash Pal
Director
Space Applications Centre
Ahmedabad

Dr C.N.R. Rao
Solid State & Structural Chemistry Unit
Indian Institute of Science
Bangalore

D Gurbakash Singh
Vice Chancellor
Delhi University
Delhi

The following members of the Governing Body of CSIR shall be members of the Society (CSIR) :

Director General
Scientific & Industrial Research, Rafi Marg
New Delhi (Chairman, Governing Body)

Nominee of Ministry of Finance
Government of India
(Shri G. Ramachandran, Finance Secretary)

Dr. S. Varadarajan
Chairman-cum-managing Director
Indian Petro-Chemicals Corporation Ltd
Jawaharnagar
Baroda

Dr B. Ramachandra Rao
Vice Chairman
University Grants Commission
Bahadur Shah Zafar Marg
New Delhi

Prof. A.K. Sharma
Calcutta University
35 Ballygunj Circular Road
Calcutta

Chairmen of the following Coordination Councils :

(i) Chemical Sciences Group

Dr H.V.K. Udupa
Director
Central Electrochemical Research Institute
Karaikudi (up to 30 Sep.80)

(ii) Physical and Earth Sciences Group

Dr S.Z. Qasim
Director
National Institute of Oceanography
Goa (up to 12 May 1982)

(iii) Engineering Sciences Group

Shri K.D. Sharma
Director
Central Glass & Ceramic Research Institute
Calcutta (up to 31 July 1980)

Prof. V.A. Altekar
Director
National Metallurgical Laboratory
Jamshedpur (from 1 Aug. 1980)

(iv) Biological Sciences Group

Dr Nitya Nand
Director
Central Drug Research Institute
Lucknow (up to 17 Jan. 1981)

I N D E X

Additive, Bread Panosorb 7
Additive, Food
  Anoxomer 6
  Butter flavour 10
  Carrageenan 11
  Cocoa butter extender 12
  Meat-like flavour 8
  Onion flavour 9
Additive, Soymilk
  Sesame extract 13
Alcohol, production 75
Analysis, Food
  Densitometer 62
  Fat content 59
  Gluten content 65
  Oil content 63
  Peroxidase test 60
  Spectrophotometer 61
  Trace metal 64
Anoxomer - a new food additive 6
Antioxidant (in) food packaging
  Regulation 85
Apple grading/Marking
  Regulation 86

Bajra, production 66
Ball/Pebble mills (for) grinding 34
Banana dryer 43
Bio-gas generator (from) agricultural waste 22
Biscuit, Export 81
Black pepper, production 70
Bleaching, Walnut 17
Bread, mould formation (prevented by) Panosorb 7
Bread, production 77
Butter flavour (in) confectionery 10

Cancer (caused by) Sweetener 89
Carrageenan gum (in) fruit drunk 11
Cement (from) rice husk 21
Centrifuge machine
  Laboratory model 35
  Versatile table-top model 36
Cereal/Milk based protein rich drink 23
Cheese (from) groundnut 24
Cocoa butter extender 12
Coconut husk-based energy plant 91
Cooker
  Extruder 40
  Solar 39
Coriander, production 72
Corrugated board (for) food packaging 51
CSIR Society, members list 93

Densitometer (in) food analysis 62
Drum rotator - portable 28

Dryer
  Fluid-bed type 45
  Solar (for) banana 43
    fish 42
    grape 44
  Spray type 41
Dry powder mixer 31

Export
  Biscuit 81
  Guargum 79
  Mango juice 80
Extruder/cooker 40
Extrusion texturization
  Soybean 15

Fabrication (of) food processing equipment 48
Fat content, Food
  Measuring instrument 59
Filling machine 46, 47
Fish/Cement powder (to control)
  Rat 5
Fish dryer 42
Fluid-bed type dryer 45
Fruit drink additive (use of) Carrageenan 11

Gaspak (for) food preservation 2
Genetic engineering (for) single cell protein production 19
Gluten content, wheat
  Extraction instrument 65
Grape dryer 44
Grape, handling 50
Grinder (see) Mixer
Groundnut
  Cheese 24
  Production 69
Guargum; export 79
Guarseed, production 73

Hammer-type pulversier 33
Heating mantles 37
Heating tapes 38
Heat recuperation
  Spray dryer 41
High lysine yeast 1
Homogenizer 32
Hydrogen peroxide (in) Food
  Regulation 83

Ice creamer 49
Import
  Edible oil 82

Kaobien - a cocoa butter extender 12

Legume, production 67

Mango juice, export 80
Meat-like flavour 8
Milk/Cereal based protein rich drink 23

ixer
Dry powder 31
Planetary 29
Vibratory 30

Nitrosamine (in) beer
Regulation 84

Oil, adulteration
Prevention 87
Oil, edible
Import 82
Production 74
Requirement 76
Oil content, Food
Measuring instrument 63
Onion flavour 9

Packaging
Grape 50
Liquid food 57
Potato Crisp 52
Packaging material, Food
Plastic corrugated board 51
Retortable pouch 53
Reclosable bag 54
Panosorb - a bread additive 7
Peanut (see) Groundnut
Pepper - black, production 70
Peroxidase test (for) food blanching 60
Planetary mixer 29
Plastic corrugated board 51
Pollution, Food 88
Potato crisp, packaging 52
Preservation, Food (by) Gaspak 2
Printing machine (for) food packaging 58
Production
Alcohol 75
Bajra 66
Black pepper 70
Bread 77
Coriander 72
Edible oil 74
Groundnut 69
Guar seed 73
Legume 67
Rice bran oil 71
Soybean 68
Protein-rich drink (from) Milk/Cereal 23
Pulse (see) Legume
Pulveriser
Hammer type 33

Rat control (by) Fish/Cement powder 5
Reclosable bag, food packaging 54
Regulation
Antioxidant (in) food packaging 85
Apple grading/Marketing 86
Hydrogen peroxide (in) food 83
Nitrosamine (in) beer 84
Retortable pouch, food packaging 53

Reverse osmosis (for) water purificatio 18
Rice bran oil, production 71
Rice husk (used for)
Cement production 21
Sodium silicate production 20
Rotary pump 25
Rural food processing centre 90

Salseed, processing 16
Sealing machine
Bottle cap 56
Liquid food packets 57
Sesame extract (as) soymilk additive 1
Sodium silicate (from) Rice husk 20
Solar cooker 39
Solar dryer
Banana 43
Fish 42
Grape 44
Solvent extraction units (in) India 78
Soybean
Extrusion 15
Production 68
Soymilk additive
Sesame extract 13
Spectrophotometer, food analysis 61
Spray dryer, Heat recuperation 41
Steam treatment
Wheat flour 14
Strip-packing machine 55
Sweetener (causes) cancer 89

Technology transfer club 92
Trace metal analyzer 64
Tray filling machine - automatic 46

Vacuum pump 26
Vibro-mixer 30
Volumetric filling machine 47
Volumetric metering feeder 27

Walnut, shell bleaching 17
Waste utilization, Food
Agricultural waste 22
Rice husk 20, 21
Water purification
Reverse osmosis 18
Wheat, gluten content
Extraction instrument 65
Wheat flour, Steam treatment 14

Yeast (with) high lysine 1

FOOD DIGEST

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Contents

1.	RAW MATERIALS ...	41
2.	STORAGE AND INFESTATION CONTROL ...	41
3.	FOOD ADDITIVES ...	43
4.	PROCESSES ...	47
5.	BYPRODUCTS AND WASTE UTILIZATION ...	48
6.	PROCESSED PRODUCTS ...	48
7.	EQUIPMENT AND MACHINERY ...	49
8.	PACKAGING ...	53
9.	ANALYSIS ...	56
10.	COMMERCIAL INTELLIGENCE ...	58
11.	FOOD REGULATION, QUALITY CONTROL AND HYGIENE ...	64
12.	TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES ...	90
13.	PERSONALIA ...	-

RAW MATERIALS

94 Orissa plants miracle edible oil tree

Cimarouba glauca of El Salvador's miracle solution to the edible oil crisis, is fast catching on in Orissa. *Cimarouba glauca* is a tree of the American tropics. It is potentially rich in oil and yields as much as 75 per cent. The tree, small to medium in size grows well under a wide range of conditions and low to medium elevations.

The fruits are in bunches and are similar in shape and size to the European olive. The kernel contains between 55 and 65 per cent of fat. The extracted oil is slightly bitter in taste which can be removed by chemical treatment. The pressed cake with 64 percent protein has a strong bitter flavour, toxic to humans and animals and can be used as manure.
(Hindustan Times, January 21, 1981; 6)

95 Sewage fish

Sewage-fed fish are not only nutritious but also tastier than those reared in fresh water. The lipid and protein content of sewage fish are significantly greater compared to fresh water fish and sodium content was also higher, according to a paper on "bio-chemical evaluation of fish grown in sewage water" presented at the recently concluded second Congress of the Federation of Asian and Occeanian Biochemists, in Bangalore. The paper said that no significanf correlation between weight and potassium content was observed in both the fishes, nor was there any significant difference in magnesium, manganese, iron, copper and zinc and moisture content. The ash content of sewage fish was found to be slightly more than that of fresh water fish.
(Financial Express. January 12, 1981; 1)

STORAGE AND INFESTATION CONTROL

96 Ferrocement storage bins

Production of ferrocement storage bins, is based on the technology developed by the Structural Engineering Research Centre (SERC), Roorkee. The design is for pre-cast ferrocement cylindrical bins of 1-10 tonnes capacity. The technique consists of a semi mechanized process for casting the cylindrical ferrocement wall unit. The bins are assembled out of prefabricated, base unit

of reinforced concerete and the wall unit and dome shaped roof of ferrocement. The bins are provided with an inlet in the roof and an outlet at the bottom for loading in and drawing out the grain.

Ferrocement is a versatile form of reinforced mortar made of closely spaced wire mesh reinforcement, impregnated with rich cement mortar mix. It is flexible and free from maintenance problems. It is a light weight, high strength material as compared to reinforced concrete and free from corrosion problems. Further, it is insect, rodent and moisture proof. The ferrocement bins thus made are suitable substitutes for the usual earthen bins (Kuthlas) and other materials used in the village for grain storage. *(Technology Awareness Service. 5(4); 1980; 58-9)*

97 Degreening room humidity

The recommended relative humidity for Florida degreening is 90 to 96% at 82 to 85_F (28 to 29 C). High relative humidity is the most difficult degreening room condition to maintain. Air in the above temperature and humidity ranges will contain 149 to 178 grains of moisture per pound of dry air (0.0214 to 0.0254 kg moisture per Kg dry air), while ambient Florida air will contain much less (for example 75_F (23_C) with 60% relative humidity would contain 78 grains of moisture per pound of dry air (0.0112 kg moisture per kg dry air)).

Humidity is most efficiently added to degreening room atmospheres with steam or with pneumatic atomizing nozzles which mix water with air. The latter are most common and have the advantage of not adding heat to the room when it is at the optimum 85 F.

Recent tests at this Centre have emphasized the importance of dry wood in complicating humidity control (nothing really new since this has been recognized as a problem in apple storages for thirty years). Wood walls and floors can take days to come into balance with the humidity. Dry wooden pallet boxes can also absorb a great deal of moisture, making it more difficult to obtain high relative humidity in degreening rooms.

Wetting down dry wooden pallet boxes at least a week in advance of the beginning of the season could be beneficial to the fruit during degreening and lower the energy used to humidify degreening rooms.
(Packaging House Newsletter. No. 106; 1979; 2-3)

98 System to detect hidden insects in foodgrain

Hidden insects that devour millions of dollars worth of stored grain

each year, are usually undetected until their damage has been done. But a Federal Department of Agriculture scientist, has found that the carbon dioxide given off by the insects in breathing, can be a clue that they are present.

Dr. William A. Bruce, has shown that the carbon dioxide can be detected even in the presence of normal atmospheric carbon dioxide using an infrared carbon dioxide gas analyser. Dr. Bruce devised a system which can detect a single insect in a 1,000 gram sample of food or grain within minutes after starting the search.

An advantage of the detection method is that, it is simple and quick to use and leaves no residues that could affect food quality. The Agriculture Department reports that laboratory tests of the system, have been successful on wheat flour, corn-meal, food mixes, cocoa powder, candy bars and dried fruit. The system is now being tested in large bulk grain storage facilities. *(The Hindu. February 25, 1981; 22)*

99 Mouse control device uses poison powder

A new innovation is mouse control utilizes poison powder to rid food plants of rodents. The ZP Mouse Tracker is a portable tracking station designed to encourage mice to enter and pick up powder on their feed and body hair.

Only ¼ to ½ tsp. of the tracking powder is needed in the station, which provides seclusion for mice to ingest the poison powder during their constant grooming process. After full control is achieved, ZP Mouse Tracker can be reused in other locations.
(Processed Prepared Food. 149(5); 1980; 82)

FOOD ADDITIVES

100 Enzyme system for jams and jellies

An alpha-amylase derived from a selected strain of *Aspergillus oryzae*, Clarase is characterized by both dextrinizing and saccharifying actions on starch, and it can be incorporated into the manufacturing process for jams and jellies.

Clarase rapidly reduces the viscosity of gelatinous starch amylose and amylopectin solutions yielding soluble dextrins with lesser quantities of glucose and maltose. Miles Laboratories, makers of Clarase, claim this enzyme system facilitates filtration by converting starch to dextrins of lower viscosity and eliminating starch hazing and opalecence problems in finished

preserves.
(*Processed Prepared Food. 149(5); 1980; 116*)

101 Pre-extrusion flavouring

L.J. Minor Corp. feature new, effective methods for pre-extrusion flavouring of textured soy products using natural meat, poultry and seafood bases. New techniques will employ several of Minor's food bases to lend realistic flavours to soy analogs. These bases are concentrated pastes containing high proportions of fresh meat, poultry, seafood or vegetables as primary ingredients, which reconstitute immediately when mixed with boiling water.
(*Processed Prepared Food. 149(5); 1980; 108*)

102 Encapsulated natural maple flavour offered

Cino-Spra Natural Maple Flavour WONF is compounded from all natural ingredients. The encapsulated flavour is heat stable, and imparts an old-time maple flavour to dry mixes and other formulations.
(*Processed Prepared Food. 149(5); 1980; 108*)

103 Charcoal grilled flavour without the fuss

Stepan Flavours has a new flavour for meat products, coatings, and extenders that gives a charcoal grilled taste without the fuss, according to the manufacturer. M-7671 Natural and Artificial Charcoal Grilled Flavour is available as a liquid or powder and has applications in snacks, processed dips and spreads, dressings, sauces, meat products, sausages, frozen hamburgers, entrees and side dishes.
(*Processed Prepared Food. 149(5); 1980; 110*)

104 Multiple-use whey protein powder

Amber Laboratories offers a spray dried whey protein product with a protein content of 65%. Amberpro is free-flowing, non-hygroscopic, powdered and has a pleasant, bland taste. This ingredient can be used in many food applications to raise protein levels, improve flavour and improve functional properties.
(*Processed Prepared Food. 149(5); 1980; 110*)

105 Food grade iron powders for enrichment

Two food grade iron powders, Electrolytic Iron A-131 and Reduced Iron 716, for the enrichment of flour, pastes and other cereal products are available from Durkee Industrial Foods Group/SCM Crop. Iron A-131 is a -325 mesh powder of high purity elemental iron obtained by electrolytic deposition. It is amorphous, odourless, lusterless and grayish-black in colour.

Iron 716 is -325 mesh powder of high purity elemental iron obtained by hydrogen reduction. According to Durkee, both iron powders meet the Codex standards and are available in 100 lb. pails.
(*Processed Prepared Food. 149(5); 1980; 108*)

106 Sodium alginate powder

A new sodium alginate powder processed for greater purity and uniformity for use as a thickener and stabilizing agent is now available from TIC gums, Inc. Affording excellent synergism with other gums and imparting improved mouthfeel to custards, puddings, salad dressings, and other oil/water emulsions, TIC Pre-Tested Sodium Alginate is extracted from an algae (*Laminaria digitata*). The carefully controlled refining process results in an attractive light-tan colour as compared to the typical brown of other alginates, and provides a product with bland taste, which is nearly odourless. Bacteriologically free from E. *Coliform*, Salmonella and Coag. Postive Staph, the TIC sodium alginate is free-flowing and easy to use and dispense. Storage ability for the product is one year under specified conditions.
(*Cereal Foods World. 25(5); 1980; 291*)

107 Gene machining sweeter gum

Tate and Lyle, the British sugar manufacturers, are to apply recombinant DNA techniques to improve production of the protein thaumatin - a substance 2,500 times sweeter than a 10% sugar solution. Thaumatin is produced by the berries of the African bush *Thaumatococcus danielli*.

One tonne of berries produces a kilogramme of thaumatin, which at present is sold only in Japan. Japan accepts thaumatin as a "natural product" which does not require toxicity testing; other countires require extensive toxicity tests.

The company could avoid crops in Third world countries if it could transfer the gene for thaumatin production from the plant to a bacterium, which could then be grown in fermenters anywhere.

Thaumatin has a molecular weight of some 20,000, around three times that of insulin. The size of the molecule, compared to that of sugar, is one drawback to its wide application as a sugar substitute, said Dr. Higginbotham. It is less mobile on the tongue, and so takes "a second or two" to register its sweetness.

(Nature 284(5758); April 24th 1980; p 653)

108 New sweetners from whey

Jam and chocolate milk made with sweeteners processed from whey were on show at the Corning Glass Works exhibited during the Fifth International DLG Engineering Exhibition at Frankfurt am Main last month. The food samples were produced using glucose/galactose syrups converted from whey lactose (a by-product of cheese manufacturing) by Corning hydrolysis units.

Corning claim the sweeteners are highly functional and can replace corn sweeteners or sucrose in a variety of food products. The hydrolysis units each have a column reactor containing lactase enzymes which have been immobilised on ceramic carriers.

The lactose hydrolysis units have been operating more than 18 months at two European sites to test the long-term stability of the technology, to prove the economics of the processes under actual industrial operation, and to supply samples for testing in a wide range of food applications. The system consists of an immobilised enzyme packed-bed column reactor, a heat exchanger, and a feed tank for pH control and sanitation.

(Food Technology in New Zealand 15(6); 1980; 11)

109 Filter powder extends fry oil life

Cooking oil life can be extended by controlling free fatty acids and colour bodies with a new adsorbent filter aid called Microsweet. The product is a blend of a Celite diatomite filter aid and specially produced synthetic calcium and magnesium silicates. Specifically developed to remove suspended solids and to control colour, it has a permeability and relative flow rate in the median range. It can remove particles less than one micron in size.

As a direct replacement for filter powder currently used in filtration, Microsweet can use the same mechanical filter. A typical daily dosage is 1% of oil weight. In other words, I lb. Microsweet for 100 lbs. oil. This dosage can be increased until the desired compromise between filter cake permeability and oil life extension has been reached.

Microsweet can be mixed directly into hot oil or can be added to the oil after it has been transferred to the filter tank.

The filter powder should be mixed well with the oil to ensure adsorption of colour compounds and free fatty acids. As the filter pump is started and normal filtration begins, Microsweet forms a filter cake on the filter paper or wire septum. Subsequent oil filtration takes place through this cake.

When testing Microsweet, researchers found that oil life was extended from 49% to 70%. The usual signs of oil deterioration-dark colour, high free fatty acid concentration, high oil adsorption in the product, possible off tastes and oil smoking - were in abeyance for a longer period of time.

In chicken frying, for instance, oil life was extended from 10-15 days or by 50%. In fish fillets frying, 70% more fillets were cooked before oil change. In French fried potato cooking, a 49% increase was noted, from 625 lb to 930 lb., according to the manufacturer.
(Processed Prepared Food 149(5); 1980; 71)

PROCESSES

110 Conversion of fat to protein

A process patented in Hungary allows conversion of fats into protein that can be admixed to various food and feed products. A small amount of yeast fungi and requisite amount of fat are added to the culture fluid placed in fermentors and aired. During aeration, the yeast cells rich in protein are detached from the admixture, separated and dried in dust form.
(Invention Intelligence 15(6); 1980; 233)

111 Drying of grain by microwave

Drying harvested grain by microwave is said to use much less energy than conventional methods, says McDonnel Douglas (USA). The process is still being tested by the company which claims that the conventional method with its hot air can harden the outside of the seed thus preventing the internal moisture from escaping. However, the microwave system dries the seed right through from the inside, outwards thus preventing it from cracking.
(Milling Feed and Fertiliser 163(6); 1980; 50)

BYPRODUCTS AND WASTE UTILIZATION

112 Roof boards from rice husk

The Indian Plywood Industries Research Institute, Bangalore, has developed durable and low-cost veneer and rice husk boards for roofing houses. According to the Director of the Institute, 1.7 crore tonnes of rice husk is available annually as an agro-byproduct in the country and even if 10% of it is utilized for making roof boards, it could provide roofs for 30 lakh houses. The veneer-roofed houses would cost about Rs. 10/sq.m. of plinth area. A housing factory to manufacture veneer and wood components for 10-12 houses a day would require an investment of about Rs. 3 lakhs.

(Technology Awareness Service 5(4); 1980; 67)

PROCESSED PRODUCTS

113 Yeast makes whey into edible oil

When whey, the liquid by-product of cheese manufacture, is stripped of proteins by an ultrafiltration step, the remaining liquid makes an excellent growth medium for yeast. Significantly, the yeast can efficiently convert nutrients in the whey into an edible oil having a composition similar to cocoa butter. As much as 65% of the dry weight of the yeast cell is edible oil. The fermentation also reduces organic material in the whey liquid (after ultrafiltration) about 90%, thereby alleviating a pollution problem.

(Chemical & Engineering News 58(20); 1980; 32)

114 How nutritive are chocolates?

Chocolate provides a number of nutrients the body needs daily. A milk chocolate bar weighing 1.5 ounces contains at least four percent of the U.S. Recommended Daily Allowance (RDA) of protein. The bar also provides two per cent of the RDA of thiamine, four per cent of the RDA of riboflavin, six per cent of the RDA for calcium and two per cent of the RDA for iron. Some chocolate bars with peanuts or almonds can provide up to 15 per cent of the RDA of protein and up to 10 per cent of the RDA for certain vitamins.

(Indian Cocoa, Arecanut & Spices J. 4(1); 1980; 20)

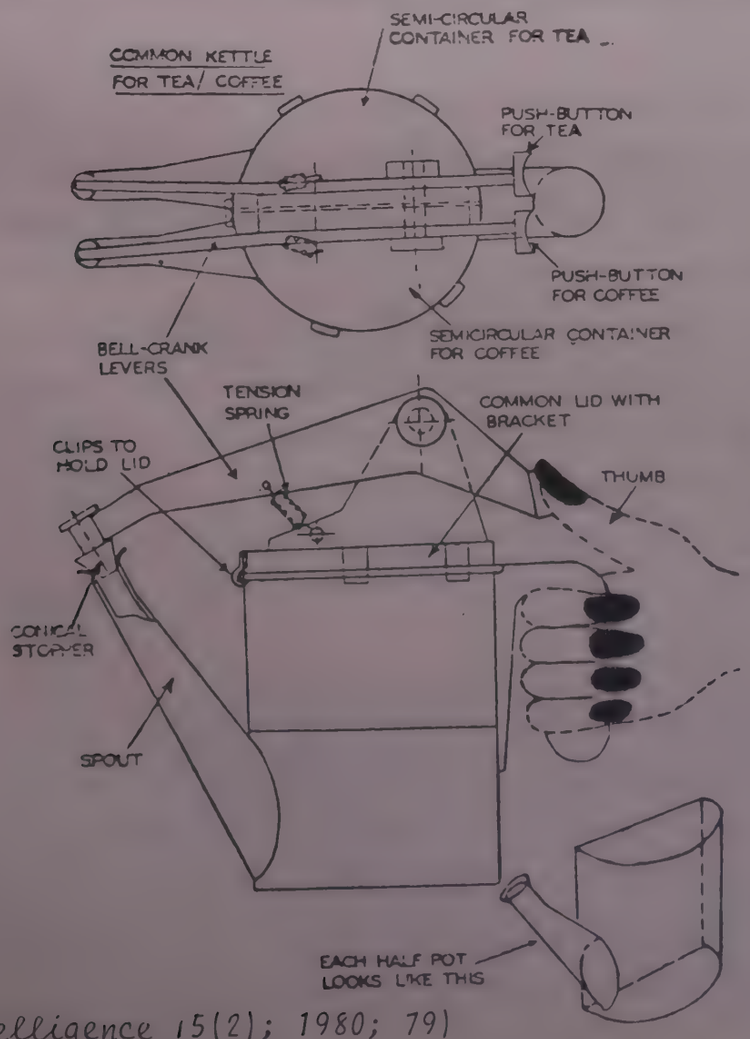
EQUIPMENT AND MACHINERY

115 Tea-cum-coffee pot

In aeroplanes during flights, tea or coffee is served to the passengers according to their preference. The air hostess first carries a teapot in one hand and milk-pot in the other. If any one wants coffee, he has to wait till she has finished serving tea - that is, until she comes again with a coffee-pot and milk-pot.

The sketch shows a composit pot comprising two semi-circular pots, each with its own spout, soldered together. There is a common circular lid with a bracket and two bell-crank levers, each having a push-button at one end and a tapered stopper at other. One pot is filled with tea and the other with coffee and the common lid is then fixed. Tea or coffee can be served by this composit pot held in one hand by pressing the desired push-button with the thumb and tilting the pot as usual.

With this pot in one hand and a regular milk-pot in the other, an air-hostess can serve tea or coffee to all the passengers as desired.



(*Invention Intelligence* 15(2); 1980; 79)

116 Industrial wipers for food processor

Users of industrial wipers who require sanitary, low-limiting wipers that are also abrasion resistant and pliable, will find them from Chicopee. Maslinn Shop Towels offer a low-cost alternative for light duty wiping and are white with no contaminants in the fiber. These wipers are lint-free and pliable and suitable for use with sanitizing and alcohol solutions for cleaning food lines and work stations.
(Processed Prepared Food 149(5); 1980; 118)

117 Cleaner and degreaser removes food residues

The new KS-2 heavy-duty industrial strength cleaner and degreaser has been formulated specifically for use in the food processing industry. It conforms with all government safety regulations. It contains only "natural" ingredients, with no chlorinated hydrocarbons, and is designed to replace such toxic solvents as kerosene and trichlorethylene. KS-2 removes food residues and grease, oils, grime, stains and spots.
(Processed Prepared Food 149(2); 1980; 76)

118 Multi-drum, multi-purpose cleaner

Heavy duty industrial cleaner BA-201 is a new multi-drum, multi-purpose cleaner that removes oil, dirt and grease, while at the same time brightening and cleaning any hard surface.

BA-201's versatility in degreasing as well as cleaning and brightening reduces the number of cleaning chemicals needed. The cleaner is non-flammable, has no flash point, is non-toxic, non-acid, non-butyl, biodegradable and free-rinsing; it will not affect painted surfaces or glass.
(Processed Prepared Food 149(5); 1980; 82)

119 Homogenizer

A homogenizer, which turns a variety of material into a homogeneous liquid is manufactured by GAKSO, a small scale unit in Kolhapur. The machine, normally imported from Denmark and England, is produced in India for the first time. The parts used are indigeneous and most of them are locally made. It is useful for medical factories, ice cream factories, milk products and multi-purpose laboratories. Capacity is 300 litres of milk or other material per hour.
(The Economic Times, December 22, 1980; 7)

120 Heat exchanger for sticky food products

A recently introduced scraped surface heat exchanger is designed for effective treatment of pumpable products, especially those that stick. The unit is for foods that can be cooled, pasteurized, sterilized, crystallized, boiled or heated. An insulating layer formed in the heat exchanger wall prevents product adhesion.

The heat or cold transfer is efficient because it takes place through both the inner and outer jackets of the exchanger. This provides a large energy exchange surface within a small operating area. Rotating scrapers cover the entire surface of both jackets, thus insuring even energy transfer, according to the manufacturer.

(Processed Prepared Food 149(5); 1980; 60)

121 Spiral plate heat exchangers

Larsen and Tubroe have introduced spiral plate heat exchangers for chemical, pharmaceutical and other process industries. The high heat transfer coefficient obtained in the spiral plate heat exchanger, coupled with the wrapping arrangement and the self cleaning effect, obtained in a single passage flow, makes the unit efficient and compact. This heat exchanger is ideally suited for handling slurries, viscous, fouling fluids and sterilised medium. The case of maintenance makes this unit ideal replacement for SS tubular heat exchanger for all applications up to a pressure of 20 kg/cm^2g.

The spiral heat exchanger is fabricated by coiling two plates, joined and spirally wound, keeping a constant distance between them. Alternate edges of the spiral passage through which the fluid flows are sealed to prevent any intermixing of fluids.

Spiral plate heat exchangers can be fabricated in various materials of construction like carbon steel, stainless steel, brass, aluminium, monel and titanium.

(Sendoc Bulletin 8(8); 1980; 20-1)

122 Low temperature liquid chiller

The low temperature liquid chillers recently introduced by Pennine Environmental Services Ltd. have the ability to cool liquids hygienically to temperatures approaching their freezing point with complete system safety, e.g. water at 1 C is readily achieved. They are capable of cooling liquids from 4500 1/h upwards with cooling ranges up to 30 C.

Constructed in stainless steel with patented chilling wings spaced to

facilitate easy cleaning, these chillers are designed for food, dairy, beverage, petroleum and chemical processing. They can be supplied in a packaged form with the necessary refrigeration plant.
(*Processing* 26(5); 1980; 147)

23 Solar drier

The Directorate of Fruit Processing and Preservation Industry (Khadi and Village Industries Commission) has developed a solar drier for drying vegetables and fruits.

Made of G.I. sheet, thermocole insulation and glass, the drier cabinet maintains 70 C temperature and can dry 5 kg of Thompson seedless grapes within 2½ hours, as against 30-35 hours taken in conventional drying. The colour and storage characteristics of the product are improved. It costs about Rs. 450 and can be fabricated in a small workshop.
(*Chemical Times* 7(34); 1980; 16)

24 New dryer for heat sensitive products

Producing dry powders from slurries or solutions has always been an industrial necessity, and a new dryer developed at the Meat Industry Research Institute of New Zealand uses a novel principle to give a less expensive, low thermal damage product. It features a fluid bed of 5 mm plastic beads through which hot air is blown at high velocity. The slurry or solution to be dried is atomised on to the top of the bed, dries, flakes off, and is swept to a cyclone, where it separates out and collects in bags. The air stream is forced through a sock filter to remove residual solids before it is exhausted.

The first industrial prototype is now producing soluble dried blood from slaughtered cattle. The MIRINZ dryer is potentially useful to the pharmaceutical, chemical and food industries as a reasonably priced, New Zealand-designe and manufactured alternative to spray dryers, heat-sensitive products.

A spray drier to produce quantities similar to those of the Hellaby prototype spouted bed dryer would cost twice as much and be no cheaper to operate, reports the MIRINZ. Also, because of the extremely large evaporating area provided by the inert heads, the new dryer takes up only half the space of its conventional competitors.
(*Food Technology in New Zealand* 15(6); 1980; 40)

PACKAGING

125 Soft-Shell - A new concept in packaging

A new dimension to packaging has been added with the introduction of a brand new concept named the "Soft-Shell" by Overwrap. The "Soft-Shell" is a new type of visual packaging that combines the benefits of skin and blister packaging.

Just as in skin packaging, in the creation of the "Soft-Shell", the film envelopes the item and is laminated to a board though only on the edge as if it were a blister. The result is a beautiful visual package with none of the deleterious effects of heat and vacuum and none of the extra costs associated with blister. Delicate shapes or heat sensitive surfaces remain undamaged. The item finds itself enveloped in a "soft" blister more conforming yet not laboriously pre-molded as with a conventional blister.

The "Soft-Shell" package is produced on the new innovator machine now available from Overwrap.

(Perfectpac 20(11); 1980; 23)

126 Seal-O-Matic pouch sealing machine

The 'Seal-O-Matic' is a high-speed pouch sealing machine introduced by Adathakkar Packaging Pvt. Ltd., Bombay. It is designed to seal filled pouches vertically at the customers' end without increasing man power. This front feed pneumatic machine is available in 3 models:

1. Mark I Semi Automatic - Pedal operated.
2. Mark II Automatic - Operated by oil tiget cat whiskers limit switch.
3. Mark III Automatic - Operated by photo cell impulse. Electro-magnetic 6 digit Counter is also optionally attached. Depending upon the model and pouch size, the speed ranges from 10 to 25 pouches per minute. The machine, adjustable to the pouch size, can seal pouches of sizes between : 300 x 230 mm and 60 x 60 mm 'Seal-O-Matic' is ideal for pouches made from heat sealable laminates.

(Perfectpac 20(11); 1980; 18)

127 Packaging machine for vacuum or gas packaging

A new compact thermoform, fill and seal packaging machine is designed for vacuum or gas packaging of meat and other foods. The Sarafloc Model is supplied with either of two heat/seal modes, depending upon the packaging application and requirements.

All areas of the machine in contact with food are of anodized aluminium or stainless steel for easy cleaning. There are no painted surfaces that can chip, peel or otherwise lead to product contamination.
(*Processed Prepared Food 149(5); 1980; 78*)

128 Packaging system for free flowing products

A compact packaging system is recommended for all free flowing products including dry and frozen foods. The Series 650 scale system automatically delivers a pre-determined weight or quantity of material to a bagging machine. Electronic signals exchanged by the scale and bagger create a continuous operation of filling and sealing without interruption. Production speeds average 15-20 charges per minute for each scale head.
(*Processed Prepared Food 149(5); 1980; 78*)

129 Paperboard and plastics packages as replacers of glass bottles

As containers for Japanese sake (rice wine), conventional glass bottles are being replaced by paper board and plastics packages. The new packages are formed from the composite materials of PE/foil/PE/paperboard, so they are light, difficult to break and easy to treat wastes. In addition, the product packed in these cups can be stored for a year under the room temperature.

In Japan, PET bottles have been widely employed as containers for soy sauce, sauce, edible oil, dressing and cosmetics, but they are not yet applied to carbonated beverages because the Food Hygienic Regulation by the Welfare Ministry bans the use of them as containers for this purpose.

The package for Japanese rice wine has had some difficult problems in its sanitation and foaming operations because the product is filled into it at the temperature of 65 to 70 C. But, since the newly-designed PET bottles are said to have completely overcome these problems, they are expected to find a wide variety of applications in the hot-filling product market in future.
(*Perfectpac 20(12); 1980; 16*)

130 Alternative to natural cork

Cellukork is specially prepared by injection moulding of EVA (Ethylene Vinyl Acetate Copolymer) which protects wine from unwanted oxidation without tainting even the most delicate white wines. It is porous and rubbery, the outside, smooth, tough and resilient. The material meets the most stringent food and drink regulations and the cork is untouched by hand during

manufacture and despatch.

Taste and taint tests carried out by Metal Box Research and Development division proves the corks perform better than natural cork. It does not need any special handling or storing once inside the bottle. It is a uniform size which helps handling on the corking machine.
(International Bottler & Packer 54(6); 1980; 50)

131 Casein solves neck labelling problems

The problems associated with neck labelling on a wide variety of bottles are well known. The 314.4438, is a higher viscosity and higher tack version of National's European casein, 908. An important feature of this is its capability to reduce the likelihood of "winging" of the bottle neck labels after labelling. "Winging" occurs because the inherent springiness of the label tends to pull it away from the tight radius of the bottle neck. The high tack of 314-4438 helps to combat this problem by holding the label edges down whilst the adhesive dires out.
(International Bottler & Packer 54(6); 1980; 61)

132 Detecting faulty containers

Taptone can detect loss of vacuum or pressure in a container and indicate low carbonation, leaking seams in cans, empty containers or no closures. The operation uses an electromagnetic pulse to deflect the lid of the container, without being in contact with it. This pulse gives off a ping, the tone of which is closely related to the vacuum or pressure inside the can. By listening electronically to this tone, variations from the required vacuum or pressure can be accurately detected. Variations of less than 5% in vacuum are shown.

The system can work on line speeds of up to 1800 containers per minute and generally only 5" of line space is required for installation. The range includes a case tester, which enables 100% testing of containers in cases prior to shipment without having to unpack the case.
(International Bottler & Packer 54(6); 1980; 50)

133 Detect leaking or broken packages with sensor

The new Wet Box Detector from Moisture Register Company is a non-contact flat-surface sensor with a solid-state electronic detector that can identify leaking or broken packages on a conveyor system.

The Detector is a RF (radio frequency) instrument with applications in packaging plants and food plants where liquids are being packaged. Mounted below the material on the conveyor system, this device used RF power loss to detect moisture coupled with a variable trip circuit. Limited field penetration of the specially designed electrode prevents tripping alarm by liquids in non-leaking containers.
(Processed Prepared Food 149(5); 1980; 118)

ANALYSIS

134 Quantitative analysis of ascorbic acid

This enzymatic method may be used to determine the ascorbic acid content in fruits, vegetables, wine, beer, juices and meat products. The method is based on the reduction of tetrazolium salts by ascorbic acid in combination with an ascorbate oxidase specific for ascorbic acid. The dye formed by this reaction (formazan) is measured photometrically and is stoichiometric with the amount of ascorbic acid in the sample.
(Food Technology 34(7); 1980; 92)

135 Dissolved oxygen indicator

The Model 330 dissolved oxygen indicator/analyser introduced by Arkon-Partech is very well suited for applicatons where the measurement of dissolved oxygen in moving water is essential. These include the brewing, food processing industries and effluent treatment.

The 330 is compact, easily transportable and its major feature is the rugged sensor. Constructed from moulded epoxy, this incorporates large cell elements and has increased electrolyte capacity for stability and long life. Arkon say that unique internal pressure compensation permits accurate operation up to 300 ft depth.

A simplified air calibration system and easy change cell membrane are other features.
(Processing 26(1); 1980; 71)

136 New texture analyzer

A wide range of test conditions can be preset on the Voland-Stevens-LFRA Texture Analyzer to yield test results easily, with excellent reproducibility and accuracy. Among the factors the unit is designed to determine are

gel strength, breaking point, hardness and consistency for such products as margarine, meat pastes, jams, jellies and pet foods. To test, one of a wide variety of probes is pressed into, or onto, the sample under preset conditions, the test cycle is initiated, and the unit automatically proceeds.
(*Processed Prepared Food* 149(5); 1980; 132)

137 Moisture content revealed simply

The new protimeter grain mini automatic, displays the moisture content of some thirty temperate and tropical crops at the touch of a button, claims the makers. All the operator has to do is to place a small sample of grain in the cell provided, compress it with the constant-pressure-torque-compressor and press a switch. The pointer of the instrument will instantly rotate and come to rest pointing to the correct moisture content on the reader ring (or scale) for the crop in question.

The readings are automatically corrected for the temperature of the sample; the instrument also automatically corrects for changes in temperature of the instrument - as both temperatures affect moisture readings.

Reader Rings are available for a number of crops including wheat, barley, oats, rye, rapeseed, milo, etc. The instrument can be used for whole and ground samples.
(*Milling Feed and Fertiliser* [illegible]; 1980; 41)

138 Dispenser unit for retort processing indicators

A dispenser for Cook-Chex retort processing indicators makes record keeping easier for low-acid food processors. The indicators contain a chemically impregnated purple band that changes to green during processing within a specified time/temperature range. The dispenser attaches to a wall or other flat surfaces and holds up to 250 indicators. These also can be collected at the end of the processing line and placed on another dispenser as a permanent record.
(*Processed Prepared Food* 149(5); 1980; 60)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

139 Per capita availability of wheat 1971 to 1979

(grams per day)

Year	Availability
1971	103.6
1972	126.0
1973	118.4
1974	107.9
1975	111.8
1976	106.0
1977	117.3
1978	125.2
1979 (estimated)	129.4

(*Economic Times, January 21, 1981; 4*)

140 Guar gum industry

India produces about 90,000 tonnes of guar gum. Production in 1978-79 was around 80,000 tonnes and export around 70,000 tonnes, earning foreign exchange of about Rs. 30 crores.

US was the biggest market for Indian guar gum, consuming almost 50 per cent of the production followed by West Germany and Italy. Australia and China were emerging as big consumers of guar gum.

(*Financial Express January 3, 1981; 3*)

141 All India final estimate of banana 1979-80

STATE	AREA (THOUSAND HECTS) 1979-80	PRODUCTION (THOUSAND TONNES) 1979-80
Andhra Pradesh	19.1	321.3
Assam	23.1	299.5
Bihar	8.8	44.1*
Gujarat	15.5	205.3
Karnataka	16.6	80.6*
Kerala	50.3	622.1
Madhya Pradesh	6.3	67.6*

contd.

contd.

STATE	AREA (THOUSAND HECTS) 1979-80	PRODUCTION (THOUSAND TONNES) 1979-80
Maharashtra	47.9	1136.6*
Manipur	2.4	31.2(P)
Meghalaya	3.0	40.6
Orissa	17.8	155.0
Tamil Nadu	56.8	1245.0
Tripura	2.6	16.5
Uttar Pradesh	0.6	2.3
Andaman & Nicobar Islands	0.9	3.8
Mizoram	2.7	2.0
ALL INDIA	274.4	4273.5

* Based on the results of random sample surveys. In case of Maharashtra the figures of Jalgaon, Parbhani, Nanded, Buldhana and Wardha districts for the year 1979-80 are based on sample surveys.

(P) Provisional

NOTES : 1. West Bengal is non-reporting for this Estimate.

2. Banana crop is not grown to any appreciable extent in other States and Union Territories not mentioned above.

3. No information regarding crop estimates is yet available from the Government of Sikkim.

142 Cashew project approved

The Cabinet Committee on Economic Affairs approved of Rs. 38.36 crore project designed to step up production of cashewnuts in Kerala, Karnataka, Andhra Pradesh and Orissa.

Of this amount Rs. 1.91 crores will be in the form of subsidy for new plantations under the centrally sponsored schemes for cashew development and Rs. 12 lakhs for taking up a study on the cashew industry.

The project is designed to help finance production programmes in six years in the States, together with necessary supporting facilities and services.

(The Hindu. February 10, 1981; 7)

143 All India Final estimate of arecanut (*Areca Ucatechu*) 1979-80
(Dried nuts)

STATE	AREA (THOUSAND HECT) 1979-80	PRODUCTION (THOUSAND TONNES) WITHOUT HUSK (PROCESSED NUTS) 1979-80
Andhra Pradesh	0.2	0.2
Assam*	46.4#	44.5#
Karnataka¢	53.0	77.0
Kerala	62.7	50.6
Maharashtra*	2.1	2.6
Meghalaya	6.5	0.9(E)
Tamil Nadu*	4.3	3.0
Tripura	0.6#	0.4#
West Bengal@@	3.1	0.8
Goa, Daman & Diu	1.4#	1.3#
Mizoram	0.3	0.1
ALL INDIA	180.6	181.4

¢ Figures are based on provisional estimates in the absence of survey results.

E Estimated and Provisional.

* Based on the results of sample survey on arecanut.

@@ Ad-hoc estimate.

\# Last year's data repeated.

NOTES : 1. Arecanut is not grown to any appreciable extent in other states and Union Territories.

2. No information regarding crop estimates is yet available from the Government of Sikkim.

(*Directorate of Economics and Statistics; Ministry of Agriculture, Government of India*)

144 All India final estimate of tapioca 1979-80

STATE	AREA (THOUSAND HECT.) 1979-80	PRODUCTION (THOUSAND TONNES) 1979-80
Andhra Pradesh	10.5	88.2
Assam	1.2	[illegible]
Karnataka	1.4	[illegible]
Kerala	290.3	4225.[illegible]
Meghalaya	2.1	11.6
Rajasthan	0.3	0.4
Tamil Nadu	58.1	1591.4
Tripura	0.2	1.0
Andaman & Nicobar Islands	0.2	1.5
Mizoram	0.3	0.7
Pondicherry	0.6	11.9
ALL INDIA	365.2	5952.4

* Based on the results of crop cutting surveys.

NOTES : 1. Tapioca is not grown to any appreciable extent in other states and Union Territories not mentioned above.

2. Rajasthan and Andaman & Nicobar Islands have been included in this estimate for the first time.

3. No information regarding crop estimates is yet available from the Government of Sikkim.

(Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi)

145 All India final estimate of turmeric 1979-80

STATE	AREA (THOUSAND HECT.) 1979-80	PRODUCTION (THOUSAND TONNES) 1979-80
Andhra Pradesh	28.5	[illegible]
Assam	7.6	[illegible]
Bihar	6.3	11.9
Karnataka	1.9	6.0
Kerala	3.7	[illegible]
Madhya Pradesh	0.4	[illegible]
Maharashtra	8.5	14.5
Meghalaya	1.4	1.[illegible]
Orissa	22.6	18.4
Rajasthan	0.2	0.2

contd.

STATE	AREA (THOUSAND HECT.) 1979-80	PRODUCTION (THOUSAND TONNES) 1979-80
Tamil Nadu	15.3	57.5
Tripura	0.9	1.3
Uttar Pradesh	0.5	0.6
Mizoram	0.1	0.3
ALL INDIA	97.7	198.8

NOTES 1. Turmeric is not grown to any appreciable extent in States/ Union Territories not mentioned above.

2. No information regarding crop estimates is yet avaialble from the Government of Sikkim.

(Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi)

146 Committee on persihable commodities

The Union Government has constituted a five-member committee to go into the question of fluctuating prices of perishable commodities like onion, potato and other vegetables. Dr. M.S. Swaminathan, Member, Planning Commission, will be the Chairman of this group which will also study the need for long-term arrangements to protect the producers and consumers of these commodities.

(Poultry Guide 18(3); 1981; 104)

EXPORTS AND IMPORTS

147 Record earnings from cashew kernel exports

India's cashew kernels exports during 1980 touched an all-time high of Rs. 151.05 crores, an increase of 40 per cent over the previous year's Rs. 107.80 crores.

This performance was despite a marginal decline in the export, which was 36,856 tonnes during the period as against 37,287 tonnes in 1979. The increase in earnings was due to the increased average unit export price during the year.

The Soviet Union, which imported 22,780 tonnes accounted for 62 per cent of the total exports. The intake by other major consumers were low. Exports to the United States, traditionally the largest market for the Indian

Cashew until recently, slumped to a record 5,948 tonnes in 1980 from 12,949 tonnes in 1979. Export to U.K., Canada, the Federal Republic of Germany, Australia and Japan also declined.

Exports of cashewnut shell liquid in 1980 showed a downward trend. Against an export of 11,441 tonnes valued at Rs. 12.83 crores in 1979 exports in 1980 were only 10,669 tonnes valued at Rs. 9.49 crores.
(The Hindu March 15, 1981; 6)

148 Centre urged to lift duty on tapioca starch

A delegation from Tamil Nadu has urged the Prime Minister, Mrs. Indira Gandhi and the Finance Minister, Mr. R. Venkataraman, to remove the excise duty on tapioca starch. Led by Mr. C. Palaniappan, MP, the delegation has also urged the Government to set up a development corporation to finance tapioca growers and liberate them from the clutches of monopolists. The other two demands are the creation of a collective marketing cell and an export promotion council.
(The Hindu February 25, 1981; 10)

149 Duty concessions to tea bag machines

The Government has decided to continue the existing concessions in customs and central excise duties in the case of paraffin wax, tea bag machines and copper. The concessional rate of import duty of 30 per cent ad valorem on tea bag machines will continue.
(The Hindu April 1, 1981; 9)

150 Raw cashew import decanalised

Import of raw cashew has been decanalised and placed on open general licence (OGL).

According to the official announcement, 50% of the quantity contracted for import would have to be offered by the importer to the Cashew Corporation of India for distribution.

The OGL facility would be available to the actual user (industrial) and export houses could import this item against licence in accordance with the general policy.
(The Hindu April 29, 1981, Vol 104, No.101, p 1)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

REGULATION

151 Tentative GRAS conclusions reached

Tentative conclusions on the safety of benzoyl peroxide, borax and boric acid, malt syrup and extract, shellac and shellac wax and stearyl alcohol have been reached by FASEB's Select Committee on GRAS Substances. All are considered GRAS at current use levels and levels that might reasonably be expected in future, except for shellac and shellac wax, for which there is insufficient information. Details are in the Federal Register of April 25.

(Food Technology 34(6); 1980; 74)

152 Safety of food irradiation process

No toxicological hazard is caused by irradiating, for conservation, any food up to a dose of 10 kilogray (1 megarad), and hence foods treated in this way no longer need to be tested for toxicity. At present, for approximately 95 per cent of food items to be treated by irradiation, the dose needed is much lower than 10 kilogray.

This clearance is given by a Joint Expert Committee on the Wholesomeness of Irradiated Food (JEFCI), which is supported by the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the International Atomic Energy Agency (IAEA).

The JEFCI recommended in 1976 acceptance of strawberries, papaya and chicken, and provisional acceptance of irradiated rice, onions and cod-redfish mixtures treated at levels of irradiation below 10 kilogray.

Based on its recommendations, 22 countries, among them Bulgaria, Canada, France, Hungary, the Netherlands and the Soviet Union, have already given clearance for unconditional or provisional irradiation conservation for foods such as deep frozen meals in hospitals, cod and haddock fillets, chicken, [illegible], strawberries, onions and potatoes.

The food retains essentially all its nutritional and sensory quality.

(Joint Nations Energy Newsletter 31(51); 1980; 4)

153 Breast-feeding slogan on milk food containers

"Breast-feeding is superior to breast milk substitutes".

Manufacturers of breast milk substitutes throughout the world would be

required to print this on the labels on their product, according to an international code prepared by the World Health Organisation.

The draft code, unanimously endorsed by the WHO executive board at its three-week session in Geneva last month, stressed that the adoption and adherence to the code was a minimum requirement and only one of the important actions required to promote child health and nutrition.

The code, board members said, should be accepted universally and be used as a basis for national legislation.

It recommends action to govern the production, storage and distribution, as well as advertising, of infant feeding products.

The products, it says, should meet international standards of quality and presentation and their labels should clearly inform the public of the superiority of breast-feeding.

(The Hindu February 11, 1981, 16)

154 Rice milling industry amendment rules

G.S.R. 1112 - The following draft of certain rules further to amend the Rice-Milling Industry (Regulation and Licensing) Rules, 1959, which the Central Government proposes to make, in exercise of the powers conferred by sub-section (1) of section 22 of the Rice-Milling Industry (Regulation) Act,1958 (21 of 1958), is hereby published, as required by sub-section (1) of the said section for the information of all persons likely to be affected thereby, and notice is hereby given that the said draft will be taken into consideration after the expiry of a period of forty five days from the date on which the copies of the Gazette of India in which this notification is published are made available to the public.

Any objections or suggestions which may be received from any person with respect to the said draft before the expiry of the period specified above will be taken into consideration by the Central Government.

DRAFT RULES

(1) These rules may be called the Rice-Milling Industry (Regulation and Licensing) Second Amendment Rules, 1980.

2. In the Rice-Milling Industry (Regulation and Licensing) Rules, 1959, in Form IV, in condition 3D, for the existing proviso, the following provisos shall be substituted, namely :-

"Provided that in the case of a rice mill other than a single huller licensed prior to the 1st May, 1970, the Licensing Officer may, for sufficient reasons to be recorded in writing, further extend the said

period by another six years, beyond the date of expiry of the period of 5 years;

Provided further that in the case of a rice mill other than a single huller licensed between the 1st May, 1970 and the 30th April, 1975, the Licensing Officer may, for sufficient reasons to be recorded in writing, further extend the said period by such period as he may consider justified, beyond the date of expiry of the period of five years but such further extension shall not go beyond the 30th April, 1981".

(Gazette of India Part II, Section 3, sub-section (i); October 25, 1980; p 2279-80)

155 Rice milling industry amendment rules

G.S.R. 732(E): Whereas certain draft rules further to amend the Rice-Milling Industry (Regulation and Licensing) Rules, 1959, were published as required by sub-section (1) of section 22 of the Rice-Milling Industry (Regulation) Act, 1958 (21 of 1958), at page 766 of the Gazette of India Extraordinary Part, II Section 3, Sub-section (i), dated the 18th July, 1980. under the notification of the Government of India in the Ministry of Agriculture (Department of Food), No. G.S.R.434(E), dated the 18th July, 1980, inviting objections and suggestions from all persons likely to be affected thereby before the expiry of a period of forty-five days from the date on which the copies of the Official Gazette in which the said notification was published were made available to the public;

And whereas the said Gazette was made available to the public on 12th August, 1980;

And whereas the objections and suggestions received from the public have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by section 22 of the said Act, the Central Government hereby makes the following rules further to amend the Rice-Milling Industry (Regulation and Licensing) Rules, 1959, namely:

1. (1) These rules may be called the Rice-Milling Industry (Regulation and Licensing) Amendment Rules, 1980.

(2) These shall come into force at once.

2. In the Rice-Milling Industry (Regulation and Licensing) Rules 1959:

(i) in rule 6, for sub-rule (1), the following sub-rule shall be substituted, namely:

"(1) Every licensee shall, before the licence is granted, deposit security at the followng rates, for the due performance of the conditions

subject to which the licence is granted to him :

(a)	Single huller type or chira producing rice mill :	At a uniform rate of Rs. 200/-.
(b)	Rice Mills other than single hullers or chira producing mills :	Mills with capacity :
		(i) upto 1 tonne Rs. 1,000/-
		(ii) above 1 tonne and upto 2 tonnes Rs. 2,000/-
		(iii) above 2 tonnes and upto 3 tonnes Rs. 3,000/-
		(iv) above 3 tonnes and upto 4 tonnes Rs. 4,000/-
		(v) above 4 tonnes Rs. 5,000/-

(ii) in rule 9, for sub-rule (2), the following shall be substituted, namely :

"(2) Every licensee shall submit to the licensing officer a return in Form V for every month so as to reach the licensing officer before the 5th day of the next month".

(iii) in the Schedule, in Form V, for the existing heading, the following heading shall be substituted, namely :

"RETURN OF STOCKS, PRODUCTION, DELIVERIES AND BALANCE OF PADDY/RICE FOR THE MONTH ENDING---------".

(Gazette of India (Extraordinary) Part II, Section , December 31, 1980;1540)

156 Coconut Development Board

G.S.R. 13(E) : In exercise of the powers conferred by sub-section (3) of section 1 of the Coconut Development Board Act, 1979 (5 of 1979), the Central Government hereby appoints the 12th day of January, 1981 as the date on which the said Act shall come into force.

(Gazette of India (Extraordinary), January 12, 1981; 22)

157 Indian boiler regulations - amendment

G.S.R. 1111 - The following draft of certain regulations further to amend the Indian Boiler Regulations, 1950, which the Central Boilers Board proposes to make in exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (5 of 1923), is hereby published as required by sub-section (1) of section 31 of the said Act, for the information of all persons

likely to be affected thereby and notice is hereby given that the said draft will be taken into consideration at the end of forty five days from the date the Gazette containing the publication of this notification is made available to the public.

Any objections or suggestions which may be received from any person with respect to the said draft within the period so specified will be considered by the Central Boilers Board. Such objections or suggestions should be addressed to the Secretary, Central Boilers Board, Ministry of Industry (Department of Industrial Development), Udyog Bhavan, New Delhi.

DRAFT REGULATIONS

1. These regulations may be called the Indian Boiler (.....Amendment) Regulations, 1980.

2. In the Indian Boiler Regulations, 1950, in Appendix 'J' for the Note at the end, the following Note shall be substituted, namely :

"Note : If and when any relaxation in respect of inspection is granted by the Inspecting Authority to the manufacturers, the reasons for granting the relaxation shall be recorded in writing by the Inspecting Authority and the same shall be intimated to the Central Boilers Board".

(Gazette of India, Part II, section 3, sub-section (i); October 25, 1980; 2279)

Water (prevention and control of pollution) Rules - amendment

G.S.R. 36(E) - In exercise of the powers conferred by section 63 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), the Central Government, in consultation with the Central Board for the Prevention and Control of Water Pollution, hereby makes the following rules to further amend the Water (Prevention and Control of Pollution) Rules, 1975, namely :

1. Short title and commencement - (i) These rules may be called the Water (Prevention and Control of Pollution) Amendment Rules, 1981.

(ii) They shall come into force on the date of their publication in the Official Gazette.

2. In the Water (Prevention and Control of Pollution) Rules, 1975, (hereinafter referred to as the said rules):-

(a) sub-rule (3) of rule 7 shall be omitted;

(b) sub-rules (4) and (5) of rule 7 shall be re-numbered as sub-rules (3) and (4) respectively;

(c) for rule 32 of the said rules, the following rule shall be substituted

namely :

"32. (1) Application for consent - An application for obtaining the consent of the Central Board (a) for bringing into use any new or altered outlet for the discharge of sewage or trade effluent into a stream or well or sewer or on land or; (b) to begin making use of any new discharge of sewage or trade effluent into a stream or well or sewer or on land under section 25, or; (c) for continuing as existing discharge of sewage or trade effluent into a stream or well or sewer or on land under section 26 of the Act shall be made to the Central Board in Form XIII.

(2) Such application shall be accompanied by fees as prescribed in the Table below:

TABLE

Order of Slab	Kilo litre of average water consumption per day	Fees in rupees
1.	10 or below	200
2.	10+ to 50	300
3.	50+ to 100	400
4.	100+ to 500	600
5.	500+ to 1000	800
6.	1000+ to 5000	1200
7.	5000+ to 10000	1600
8.	10000+ to 50000	2400
9.	50000+ to 100000	3200
10.	100000+ to 500000	4800
11.	500000+ to 1000000	6400

+ more than the stated figure, thus 10+ means more than 10.

(3) Any application not accompanied by the prescribed fees shall not be entertained by the Board.

(4) The fees shall be paid by Bank Draft in favour of the Central Board for the Prevention and Control of Water Pollution".

(d) In Form XIII of the said rules -

(i) in para 1, in sub-paragrah (c) after item No. (vi), the following items shall be inserted, namely :

"(vii) Sewer owned by.....
(viii) Well owned by.....";

(ii) after paragraph 6, the following new paragraph shall be inserted, namely :

"7. I/We enclose herewith Bank draft No.....dated..... for Rs.....(Rupees.....) in favour of the Central Board for the Prevention and Control of Water Pollution, New Delhi as fees payable under section 25 of the Act.";

(e) In annexure to Form XIII, in Serial No. 19, after item No. (vii) the following items shall be inserted, namely :

"(vii) Sewer.
(ix) Well".

(Gazette of India (Extraordinary) Part II, section 3, subsection (i); January 29, 1981; 72)

159 Vegetable oil products order - amendment

G.S.R. 717(E) - In exercise of the power conferred by sub-clause (1) of clause 4 and sub-clause (1) of clause 4B of the Vegetable Oil Products Control Order, 1947, and in supersession of the Order of the Government of India in the late Ministry of Commerce and Civil Supplies (Department of Civil Supplies) No. G.S.R. 520(E), dated the 29th August, 1979, and in modification of the limits of usage of refined vegetable oils specified in sub-clause (a) of clause (2) of paragraph 2 of the First Schedule to the Vegetable Oil Products (Standard of Quality) Order, 1975, the Vegetable Oil Products Controller for India hereby prescribes the limits specified in column (3) of the Table below as the limits of usage of vegetable oil specified in the corresponding entry in column (1) of the said Table in the manufacture of any vegetable oil product (other than any such product manufactured for non-edible industrial use or margarine) in the regions specified in the corresponding entry in column (2) of the said Table for the period specified in the corresponding entry in column (4) of the said Table.

TABLE

Name of the Vegetable Oil	Region	Limit of usage (per cent by weight) of vegetable oil product	Period of computation
1	2	3	4
1. Indigenous cottonseed oil; or indigenous minor oils (that is, nigerseed oil, soyabean oil, rice-bran oil, maize (corn) oil, watermelon seed oil, sunflower seed oil, mahua oil and safflower seed oil) or imported vegetable oils	All Regions	95	Quarterly

contd.

contd.

1	2	3	4
supplied through the State Trading Corporation of India or any combination thereof; Provided that where imported vegetable oils are used, the percentage of such imported vegetable oils shall not exceed 70% (seventy per cent).			
2. Refined sesame oil as liquid oil	All Regions	5	Quarterly

2. This order shall come into force on the 1st day of January, 1981.

(Gazette of India (Extraordinary) Part II, section 3, sub-section (i); 1511)

160 Prevention of food adulteration rules - amednment

G.S.R. 1057 - Whereas a draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, was published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), after consultation with the Central Committee for Food Standards, at page 434 of the Gazette of India, Part II, Section 3, Sub-section (1) dated the 8th March, 1980, under notification of the Government of India in the Ministry of Health and Family Welfare No. GSR 269 dated the 23rd February. 1980 inviting objections and suggestions from all persons likely to be affected thereby before the expiry of 45 days from the date on which the copies of the said Gazette are made available to the public :

And whereas it is considered desirable to publish the said draft rules again for information of all persons likely to be affected thereby ;

Now, therefore, the following draft rules further to amend the Prevention of Food Adulteration Rules 1955, which Central Government proposes to make in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act 1954 (37 of 1954), after consultation with the Central Committee for Food Standards, is hereby published as required by the said sub-section for information of all persons likely to be affected thereby, and notice is hereby given that the said draft rules will be taken into consideration after ninty days from the date on which the said

notification is published in the Official Gazette.

Any objection or suggestion which may be received from any person with respect to the said draft rules before the expiry of the period so specified will be considered by Central Government.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1980.

2. In the Prevention of Food Adulteration Rules, 1955, in Appendix B for item A. 05.07, the following item and explanation shall be substituted namely :

"A. 05.07 - Cloves (Laung) whole means the dried unopened flower buds of Eugenia Caryophyllate Thumb. It shall not contain more than 5.0 per cent headless cloves by weight. The extraneous matter which includes dirt, dust, mud, stones, pieces of wood, all other particles originating from the plant other than cloves, tendril cloves (the floral peduncle of cloves) and penduncles shall not exceed 1.0 per cent by weight and the amount of insect damaged matter shall not exceed 5.0 per cent by weight. The cloves shall contain not less than 15.0 per cent (v)/w of volatile oil.

Explanation - (i) The term "insect damaged matter" means cloves that are partially or wholly bored by insects.

(ii) The term "headless cloves" means cloves constituted on only by the receptacle and sepals".

(Gazette of India Part II, section 3, sub-section (i); October 11, 1980; 2191

161 Prevention of Food Adulteration Rules - Amendment

G.S.R. 1190 - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government proposes to make in exercise of the powers conferred by sub-section (1) of the section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (1) of section 23 of the said Act for the inforamtion of all persons likely to be affected thereby, and notice is hereby given that the said draft rules will be taken into consideration after the expiry of 90 days from the date on which the said notification is published in the Official Gazette.

Any objection or suggestion which may be received from any person with respect to the said draft rules before the expiry of the period so specified, will be considered by the Central Government.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1980.

2. In the Prevention of Food Adulteration Rules, 1955, (hereinafter referred to above as said rules), -

(i) In rule 49 of the said rules, after sub-rule (9), the following shall be inserted, namely :-

"(10) No person shall sell mineral oil (foodgrade) for use in sweets and confectionery except under ISI certification Mark".

(ii) In Appendix B to the said rules, for item A. 25, the follcwing item shall be substituted, namely :-

A.25 Sweets and Confectionery :

A.25.01 : Sugar boiled confectionery shall mean a processed composite food article made from sugar and doctoring agents such as liquid glucose, cream of tartar, etc. either by boiling or by process of panning. It may contain centre filling which may be in the form of liquids, semi-solids or solids with coating of sugar or chocolate or both. It may also contain one or more of the following:-

(i) Permitted anti-oxidants.
(ii) Permitted stabilishing and emulsifying agents.
(iii) Permitted natural colours.
(iv) Permitted Flavour, flavour improvers, fixers.
(v) Acidulants such as citric acid, tartaric acid, malic acid.
(vi) Jellifying agents.
(vii) Permitted preservatives
(viii) Permitted solvents.
(ix) Sweetening agents such as sugar, invert sugar, Jaggery, lactose, gur, bura sugar, khandsari, sorbitol, honey.
(x) Edible molasses.
(xi) Milk and milk products.
(xii) Malt extract.
(xiii) Edible starches.
(xiv) Edible oils and fats.
(xv) Common salt
(xvi) Fruits and fruit products and nuts and nut products.
(xvii) Tea, Coffee, chocolate, cocoa.
(xviii) Vitamins and minerals.
(xix) Shellac and bees wax.
(xx) Gelatine (foodgrade).
(xxi) Edible desicated coconut.
(xxii) Spices and condiments.
(xxiii) Candid peel.
(xxiv) Enzymes.

It shall not contain synthetic colour or artificial sweetners. Mineral oil (foodgrade), if used as a lubricant, shall not exceed the limit of 0.2 per cent by weight.

(i) It shall also conform to the following standards i.e. Total ash (as

sulphated ash)-Not more than 2.5 per cent by weight.

(ii) Ash insoluble in dilute Hydrochloric acid - Not more than 0.2 per cent by weight.

It may contain sulphur dioxide in concentration not exceeding 350 ppm.

A.25.02 : Lozenges :- Lozenges are confections mainly made out of pulverised sugar or icing sugar which contain binding material and lubricants. These are generally made from cold mixing which means that no primary boiling or cooking of the ingredients is required. It may contain one or more of the following :-

(i) Permitted natural colours
(ii) Permitted flavours
(iii) Acidulant such as tartaric acid, malic acid and citric acid
(iv) Permitted emulsifying and stabilising agents
(v) Sweetening agents such as dextrose, dextrose-hydrate, honey, glucose
(vi) Milk and milk products
(vii) Nuts and nut products
(viii) Sodium bicarbonate
(ix) Malt
(x) Starch

Mineral oil (foodgrade), if used as lubricant, shall not exceed the limit of 0.2 per cent by weight. It shall not contain synthetic colours or artificial sweetners. It shall conform to the following standards :

1. Sulphated ash - Not more than 3.0 per cent by weight.
2. Ash insoluble in dilute Hydrochloric acid - Not more than 0.2 per cent by weight.

It may contain sulphur dioxide in concentration not exceeding 350 ppm

A. 250.3 Toffees.

Toffees are boiled sugar confections. It shall be made out of sugar, vanaspati or any edible oil or fat. Toffees may be of 4 types, namely :

(i) Plain toffees -

It shall be made out of sugar, edible fat. It may contain any of the followings :

(a) Permitted natural colours
(b) Permitted flavour
(c) Permitted anti-oxidants
(d) Permitted emulsifying and stabilising agents
(e) Acidulants such as citric acid, tartaric acid
(f) Cream of tartar
(g) Sweetening agents such as Gur, honey, liquid glucose (also known as corn syrup or glucose syrup).
(h) Malt syrup or malt or malt extract
(i) Sorbitol (foodgrade)

(j) Protein isolate
(k) Edible oil seed flour
(l) Edible common salt
(m) Edible starches
(n) Vitamins

(ii) Milk Toffee : It shall be made out of sugar, vanaspati, milk fat or any edible oil and milk in any form and in addition may contain any of the materials used in the making of plain toffee.

(iii) Modified Toffee : It shall be made from the ingredients, used for plain toffee or milk toffee. In addition, it may contain one or more of the followings :-

(i) Chocolate
(ii) Coffee
(iii) Cocoa or Cocoa butter
(iv) Fruits - Fresh or dried and/or fruit products.
(v) Nuts and Nut products

(iv) Butter Toffee : It shall be made of the ingredients used for plain toffee or milk toffee or modified toffee, but it shall contain not less than 5 per cent butter by weight.

Toffee shall not contain synthetic colour or artificial sweetners.

Toffees shall also conform to the following requirements given in the table below namely :

TABLE

Sl. No.	Characteristics	Plain toffee or modified toffee	Milk toffee	Butter toffee
1.	Ash sulphated by weight	not more than 2.5 per cent	not more than 2.5 per cent	not more than 2.5 per cent
2.	Ash insoluble in dilutec Hydro-chloric acid by weight	not more than 0.2 per cent	not more than 0.2 per cent	not more than 0.2 per cent
3.	Fat per cent by weight (on dry basis)	-	not less than 4 per cent	not less than 4 per cent
4.	Total protein (Nx 6.25) per cent by weight	-	not less than 3 per cent	-

(Gazette of India Part II, Section 3, sub-section (i); 15th NOvember, 1980; 2392-3)

162 Prevention of Food Adulteration - Amendment Rules

G.S.R. 1191 - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government proposes to make in exercise of the powers conferred by sub-section (1) of the Section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (1) of the Section 23 of the said Act. For the information of all persons likely to be affected thereby, and notice is hereby given that the said draft rules will be taken into consideration after the expiry of 90 days from the date on which this notification is published in the Official Gazette.

Any objection or suggestion which may be received from any person with respect to the said draft rules before the expiry of the period so specified, will be considered by the Central Government.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1980.

2. In the prevention of Food Adulteration Rules, 1955, in Appendix B.

(i) In item A. 07.03, in the last sentence, for the words, "Fiehe's test should ordinarily be negative", the words "Fiehe's test and Aniline Chloride test shall be negative" shall be substituted.

(ii) For item A. 07.04, the following shall be substituted, namely:

"ICE LOLLIES OR EDIBLE ICES" means the frozen produce which may contain the permitted flavours, sugar, syrup, fruit juices, cocoa, citric acid, stabilizers or emulsifiers not exceeding 0.5 per cent by weight, it shall not contain artificial sweetener or coaltar food colours".

(iii) after item A. 07.04 the following items shall be inserted, namely:

"A. 07.04.01-ICE CANDY means the frozen ice produce which may contain permitted flavour, syrup, fruit, juices, nuts, cocoa, citric acid, stabilisers or emulsifiers not exceeding 0.5 per cent, it shall also contain sugar not less than 10 per cent by weight on dry weight basis. It shall not contain any artificial sweetener or coaltar food colour".

(iv) in item A. 07.05 and A. 07.08, after the existing entries, the following shall be added in the end, namely :-

"It may also contain sodium bicarbonate (food grade)".

(v) after item A. 07.10. the following new item shall be inserted, namely:

"A. 07.11 DRIED GLUCOSE SYRUP means the material in the form of coarse or fine white to creamish white powder, sweet to taste, blend in flavour and somewhat hygroscopic. It shall be free from fermentation, evidence of mould growth, dirt or other extraneous matter, or added sweetening or flavouring agent. It shall also not contain any added natural or coaltar food colour. It shall conform to the following standards :

Total solids content	Not less than 93.0 per cent by weight
Reducing sugar content	Not less than 20.0 per cent by weight
Sulphated ash	Not more than 1.0 per cent by weight
Sulphur dioxide	Not more than 40 ppm

Syrup used for manufacture of sugar confectionaries may contain sulphur-dioxide in an amount not exceeding 150 ppm".

(vi) in item A.0801, in sub-paragragh (5), in clause (i), for the words and figures "and shall be not less than 3.0 per cent and not more than 6.0 per cent by weight", the words and figures " and shall be not less than 3.0 per cent and not more than 7.0 per cent by weight" shall be substituted.

(vii) in item A. 14, in clause (c), for the entry "Not more than 1.0 per cent," the following entry shall be substituted, namely "

"Not more than 1.0 per cent by weight on dry basis";

(viii) in item A. 14.01 in clause (c) for the entry "Not more than 1.2 per cent" the following entry shall be substituted, namely :-

"Not more than 1.2 per cent by weight on dry basis";

(ix) in items A. 14 and 14.01, in clause (e) of both items for the entry "Not less than 1.0 per cent and not more than 2.2 per cent expressed as K3O" the following shall be substituted, namely :-

"Not less than 1.0 per cent and not more than 2.2 per cent expressed as K_2O on dry basis".

(x) in items A. 14 and A. 14.01, in the last sentence, after the words "It shall not contain any added colouring matter", the words "or added flavour" shall be substituted.

[Gazette of India Part II. section 3, sub-section (i); 2394-5]

163 Prevention of Food Adulteration Rules - Sixth Amendment

G.S.R. 710(E) - Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), (hereinafter referred to as the said Act) on pages 2444 to 2457 of the Gazette of India, Part II, Section 3, sub-section (i) dated the 3rd November, 1979 under the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) G.S.R.1321

dated the 18th October, 1979, and amended by notification G.S.R. 9(E), dated 16-1-80 inviting objections and suggestions from all persons likely to be affected thereby till the 31.3. 1980;

And whereas objections and suggestions received from the public on the said draft notification have considered by the Central Government :

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely :-

1. (1) These rules may be called the Prevention of Food Adulteration (Sixth Amendment) Rules, 1980.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the said rules), in rule 57, in the Table, under sub-rule (2), in serial No. 1, after item (i-A) and the entries relating thereto in columns (2) and (3) the following item and entry respectively shall be inserted namely :

(2) "(i-B) edible oil

3. In Appendix B of the said rules, after item A.17.17, the following items shall be inserted namely:

"A. 17.18 imported rapeseed oil (Tori-ka-tel) means -

(a) the oil obtained from clean and sound rapeseed belonging to compestris, juncea or napus varieties of Brassica, by the method of expression or solvent extraction and imported into India, or

(b) the oil obtained from clean and sound imported rapeseed belonging to compestris, juncea, or napus varieties of Brassica by the method of expression or solvent extraction.

It shall be clear, free from rancidity, suspended or other foreign matter separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards, namely :-

(a) Butyro-refractometer reading at 40 C or Refractive Index at 40 C	51.0-64.8 1,4600-1,4690
(b) Iodine value (Wij's method)	94-126
(c) Saponification value	166-198
(d) Unsaponifiable matter	Not more than 2.0 percent
(e) Test for argemone oil	Negative
(f) Test for Hydrocyanic acid (Ferric Chloride test)	Passes the test.

(g) Free fatty acids (expressed as oleic acid) or	Not more than 3.0 per cent
Acid value	Not more than 6.0

Rapeseed oil imported into India or rapeseed oil obtained by solvent extraction shall be supplied for human consumption only if it is refined and it shall conform to the standards laid down under item A. 17.15 except for free fatty acid content which shall not be more than 0.3 per cent (Acid value being not more than 0.6).

Additionally, it shall have Flash Point (Pensky-Marten closed method) not less than 250 C.

A.17.19 - Palm Oil means the Oil obtained from fleshy mesocarp of fruits of the oil palm (Elaeis Guineensis) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oil. It shall conform to the following standards, namely :

(a) Butyro-refractometer reading at 50 C	35.5-44.0
or	
Refractive Index at 50 C	1.4491-1.4552
(b) Melting point (capillary slip method)	Not more than 37 C
(c) Iodine value (Wij's method)	45-56
(d) Saponification value	195-205
(e) Unsaponifiable matter	Not more than 1.2 per cent
(f) Free Fatty acids (expressed as oleic acid)	Not more than 5.0 per cent
or	
Acid value	Not more than 10.0

Palm oil shall be refined before it is supplied for human consumption and it shall conform to the standards laid down under item A.17.15. Additionally, it shall have Flash point (Pensky-Marten closed method) not less than 250 C.

A.17.20 - Palmolein means the liquid fraction obtained by fractionation of palm oil obtained from the fleshy mesocarp of fruits of oil palm (Elaeis Guineensis) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oils. It shall conform to the following standards, namely :-

(a) Butyro-refractometer reading at 40 C	43.7-52.5
or	
Refractive Index at 40 C	1.4550-1.4610

(b) Iodine value (Wij's method)	54-62
(c) Saponification value	195-205
(d) Cloud point	Not more than 18 C
(e) Unsaponifiable matter	Not more than 1.2 per cent
(f) Free Fatty Acids (expressed as oleic acid)	Not more than 3.0 per cent
or	
Acid value	Not more than 6.0

Further, if the palmolein is obtained from solvent extracted palm oil, it shall be refined before it is supplied for human consumption and it shall conform to the standards laid down under item A.17.15. Additionally, it shall have Flash point (Pensky-Marten-closed method) not less than 250 C.

A.17.21-Palm Kernel oil means the oil obtained from sound kernel of the fruits of oil palm (Elaeis Guinensis) tree by the method of expression for solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring sub - stance or mineral oil. It shall conform to the following standards, namely:

(a) Butyro refractometer reading at 40 C	35.3-39.5
or	
Refractive Index at 40 C	1.4490-1.4520
(b) Iodine value (Wij's method)	10-23
(c) Saponification value	237-255
(d) Unsaponifiable matter	Not more than 1.2 per cent
(e) Free Fatty Acids (expressed as Oleic acid)	Not more than 3.0 per cent
or	
Acid value	Not more than 6.0

Further, if the oil obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards, laid down under item A.17.15. Additionally it shall have Flash point(Pensky-Marten closed method)-not less than 250 C.

A.17.22 - Sun Flower seed oil : means the oil obtained from clear and sound sunflower seeds or cake from the plants, Helianthus annus Linn. (Family: composite) by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards, namely :-

(a) Butyro refractometer reading at 40 C	57.1-82.9
or	
Refractive Index at 40 C	1.4640-1.4800
(b) Iodine value (Wij's method)	100-145
(c) Saponification value	188-194
(d) Unsaponifiable matter	Not more than 1.5 per cent
(e) Free Fatty acids (expressed as Oleic acid)	Not more than 3.0 per cent
or	
Acid value	Not more than 6.0

Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under item A.17.15. Additionally, it shall have Flash point (Pensky-Marten closed method)-not less than 250 C. *(Gazette of India (extraordinary) Part II, Section 3, sub-section (i); 22nd December, 1980; 1501-2)*

164 Prevention of Food Adulteration Rules - Amendment

G.S.R. 142 - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955 which the Central Government proposes to make in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (i) of said section 23 of the said Act, for the information of all persons likely to be affected thereby, and notice is hereby given that the said draft rules will be taken into consideration on or after the expiry of a period of 90 days from the date of publication of this notification in the Official Gazette.

Any objection or suggestion which may be received from any person with respect to the said draft rules before the expiry of the aforesaid period will be considered by the Central Government.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1981.

2. In the Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the said rules), in Appendix B;

(i) in item A.12,

(a) after 3, the following shall be inserted, namely :-

"4-Melting point-31 to 37 degree C". (copllary slip method)

5. Unsaponifiable matter- not more than 1.5 per cent by weight.

6. Free Fatty Acids (as oleic acid)-not more than 0.3 per cent by weight.

Or

Acid value-not more than 0.6

(b) for the figure and words '2 red units' the figure and words '2.5 red units' shall be substituted.

(ii) in item A.17.09 -

(a) for the words "SAFFLOWER OIL" the words "SAFFLOWER SEED OIL" shall be substituted.

(b) in clause (C), for figure "146", the figure "148" shall be substituted.

(iii) after item A.17.17, the following shall be added, namely :-

"A.17.18-Rice Bran Oil : means the oil obtained from the layer around the endosperm of rice obtained from paddy of Oryza sativa Linn. Fam Gramineae, which is removed during the process of rice milling and is generally known as rice bran.

Refined Rice bran oil shall be obtained from solvent extracted oil, neutralised with alkali, bleached with bleaching earth or activated carbon or both and deodorised with steam.

The oil shall be clear and free from rancidity adulterants, sediment, suspended and other foreign matters, separated water and added colouring and flavouring substances. The clarity of the oil shall be judged by the absence of turbidity after keeping the filtered sample at 35 C for 24 hr. Rice Bran oil shall be sold for human consumption only after refining. It shall conform to the following standards, namely:-

(i) Moisture and insoluble impurities, percent by weight	Not more than 0.1
(ii) Refractive index at 40 C	1.4600 to 1.4700
or	
Butyro-refractometer reading at 40 C	51.0 to 66.4
(iii) Saponification value	180 to 195
(iv) Iodine value (Wijs' method)	90 to 105
(v) Free Fatty Acid (as oleic acid), per cent by weight	Not more than 0.25
or	
Acid value	Not more than 0.5
(vi) Unsaponifiable matter, per cent by weight	Not more than 3.5
(vii) Flash point (Pensky-Marten closed method)	Not less than 250 C

(iv) After item A.17.18 as so added, the following note shall be inserted namely :

Note : The edible oils prescribed under item A.17 shall be free from castor oil".

(v) in item 1.19 :

(a) after the words, "allowed by the Government for the purpose", the following words shall be added, namely :-

"Refined sal seed fat, if used, shall not be more than 10 per cent of the total oil mix".

(b) in clause (viii), for the figure "1.25", the figure "1.5" shall be substituted.

(vi) in item A.19.01, after clause (b), the following clause shall be added, namely :

"(c) it may contain added mono-glycerides and diglycerides as emulsifying agents".

(Gazette of India Part II, section 3, sub-section (i); 7th February, 1981; 274-5)

165 Prevention of Food Adulteration Rules - Amendment

G.S.R. 23(E) - Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act,1954 (37 of 1954) with the notification of Govt. of Indian in the Ministry of Health and Family Welfare (Dept. of Health) No. G.S.R. 1280 dated the 28th September, 1979 at pages 2386-2387 of the Gazette of India, Part II, Sec 3, sub-section (i) dated 20th October, 1979 for inviting objections and suggestions from all the persons likely to be affected thereby before expiry of 45 days from the date on which the copies of the Gazette of India in which the said notification was published were made available to the public :

And whereas the copies of the said Gazette were made available to the public on the 20th October, 1979;

And whereas the objections and suggestions received from the public on the draft rules have been considered by the Central Government.

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government after consultation with Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely :

RULES

1. (1) These rules may be called the Prevention of Food Adulteration (1st Amendment) Rules, 1981.

(2) They shall come into force on the date of their publication in the Official Gazette, except rules 2 and 3 which shall come into force after the expiry of six months from the date of publication of these rules.

2. In the Prevention of Food Adulteration Rules, 1955, (hereinafter referred to as said Rules), in rule 42 after sub-rule (U), the following shall be inserted, namely :

"(V) Every container or package of table salt containing aluminium silicate as anticaking agent shall bear the following label, namely :-

TABLE SALT

(Contains permitted anti-caking agent)

3. In rule 49 of the said rules, after sub-rule (9) the following sub-rule shall be inserted, namely :-

"(10) Table salt containing an anticaking agent shall be said only in a package which shall bear the label as specified in sub-rule (V) of rule 42".

4. In Appendix B of the said rules, for item A.15, the following shall be substituted, namely : :-

"A.15-Edible common salt means a crystalline solid, white, pale pink, or light grey in colour free from visible contamination with clay, grit and other extraneous adulterant and impurities. It shall not contain moisture in excess of six per cent of the weight of the undried sample. The sodium chloride content (as NaCl) and the matter soluble in water other than sodium chloride on dry weight basis shall be as specified in columns (2) and (3) of the Table below against the period of validity mentioned in the corresponding entry in column (1) of the said Table. The matter insoluble in water shall not exceed 1.0 per cent by weight on dry weight basis.

TABLE

Period of Validity	Minimum percentage of sodium chloride content as NaCl (on dry basis)	Minimum percentage of matter soluble in water other than sodium chloride (on dry basis)
Upto 31.3.82	94.0	5.0
from 1.4.82 to 31.3.83	94.5	4.5
from 1.4.83 to 31.3.84	95.0	4.0
from 1.4.84 to 31.3.85	95.5	3.5
from 1.4.85 onwards	96.0	3.0

Provided that table salt may contain aluminium silicate as an anticaking agent to a maximum extent of 2.0 per cent;

Provided further that the total matter insoluble in water in such cases shall not exceed 2.2 per cent and the sodium chloride content on dry basis shall not be less than 97.0 per cent by weight".

(Gazette of India, Part II, section 3, sub-section (i), 16th January, 1981; 38)

196 Customs tariff for almonds, raisins and dates

G.S.R. 653 (E) - In exercise of the powers conferred by sub-section (2) of section 14 of the Customs Act, 1962 (52 of 1962) and in supersession of the notification of the Government of India in the Ministry of Finance, Department of Revenue, No.142-Customs, dated the 27th June, 1979, the Central Government, being satisfied that it is ncessary so to do, hereby fixes with immediate effect, for the goods specified in column (2) of the Schedule annexed hereto and falling within Chapter 8 of the First Schedule to the Customs Tariff Act, 1975 (51 of 1975), the tariff values specified in the corresponding entry in column (3) thereof.

SCHEDULE

Sl. No.	Description of goods	Tariff values
1.	Almonds in the Shell -	
	(i) Hard shell	
	(1) of Afghanistan origin	Per quintal Rs. 845
	(2) of Iranian Origin	Per quintal Rs. 850
	(ii) Soft shell	
	(1) of Afghanistan origin	Per quintal Rs. 1765
	(2) of Iranian Origin	Per quintal Rs. 2185
2.	Almond Kernals -	
	(1) of Afghanistan Origin	Per quintal Rs. 3105
	(2) of other than Afghanistan Origin	Per quintal Rs. 4450
3.	Raisins of Afghanistan and Iranian Origin -	
	(a) Kishmish	Per quintal Rs. 1190
	(b) Abjosh	Per quintal Rs. 740
	(c) Others excluding sultanas	Per quintal Rs. 610
4.	Dates	
	(a) Chupchap	Per quintal Rs. 470
	(b) Zarak Halawi	Per quintal Rs. 350
	(c) Wet dates	Per quintal Rs. 160
	(d) Others	Per quintal Rs. 580

(Gazette of India, Part II, section 3, sub-section (i), 14th November, 1980; 1326)

167 Customs Tariff for groundnuts

G.S.R. 11(E) - In exercise of the powers conferred by sub-section (1) of section 8 of the Customs Tariff Act, 1975 (51 of 1975), the Central Government hereby directs that the following further amendment be made in the Second Schedule to the said Act, namely :-

In the said Second Schedule, for Heading No. 20 and the entries relating thereto, the following shall be substituted, namely :-

Heading No.	Description of articles	Rate of duty
"20.	Groundnut -	
	(i) Groundnut kernel	Rs.3000 per tonne
	(ii) Groundnut in shell	Rs.2250 per tonne."

(Gazette of India (extraordinary), Part II, section 3, subsection (i); January 9, 1981; 20)

168 Customs Tariff exemption to turmeric

G.S.R. 651(E). In exercise of the powers conferred by sub-section (1) of section 25 of the Customs Act, 1962 (52 of 1962), the Central Government being satisfied that it is necessary in the public interest so to do, hereby exempts turmeric falling under Heading No. 25 of the Second Schedule to the Customs Tariff Act, 1975 (51 of 1975), when exported out of India, from the whole of the duty of customs leviable thereon under the said Second Scudule.
(Gazette of India, Part II, section 3, sub-section (i); 14th November, 1980; 1322)

169 Customs tariff exemption to instant coffee

G.S.R. 2(E) - In exercise of the powers conferred by sub-section (1) of section 25 of the Customs Act, 1962 (52 of 1962), the Central Government being satisifed that it is ncessary in the public interest so to do, hereby exempts Instant Coffee, falling under Heading No. 1 of the Second Schedule to the Customs Tariff Act, 1975 (51 of 1975), when exported out of India, from the whole of the duty of customs leviable thereon under the said Second Schedule.
(Gazette of India (extraordinary) Part II; section 3; sub-section (i); 1st January, 1981; 4)

170 Excise exemption to sterilised Miltone

G.S.R. 60(E) - in Exercise of the powers conferred under sub-rule (1) of rule 8 of the Central Excise Rules, 1944, the Central Government hereby exempts "sterilised miltone", falling under item No. IB of the First Schedule to the Central Excise and Salt Act, 1944 (1 of 1944), from the whole of duty of exise leviable thereon.
(Gazette of India (extraordinary) Part II; section 3; sub-section (i); 12th February, 1981; 156)

171 Canada releases results of additives survey

The majority of Canadians fear that commonly used food additives represent a health hazard, according to results of a national survey on food additives conducted last summer by Canada's Health Protection Branch. Almost 25,000 Canadians completed questionnaires asking their views on the definition, use, value, and control of food additives. Indicating their degree of agreement or disagreement with certain statements, 68% of the respondents felt that there is inadequate control of food additives; 70% felt that food additives do not improve the quality of food; 69% felt that the addition of colours to food is not justifiable; 60% said that they make an effort to eat food with less additives; 87% said that they are concerned about the possible effects of food additives on their health; and 91% said that they need more information about food additives. The media were cited as being the most common source of information on food additives.

(*Food Technology*. 34(7); 1980; 89)

172 Fruit cream not ice-cream

No standard has been prescribed for fruit cream - once it is held that fruit-cream is not covered by item A.11.02.08 it seems to be the common case that the rules do not prescribe any separate standard for fruit-cream. That being so it is plain that under the existing provisions of the PFA Rules, there is no yard-stick by which to judge the purity or otherwise of the product taken from the petitioner and in the absence of prescribed standard no conviction is possible seems to be manifest both on principle and precedent.

(*All India Prevention of Food Adulteration Cases. Part-9; 1980; 6*)

HYGIENE

173 400 foodstuffs have residues of pesticides

Residues of pesticides like DDT, malathion and lindane are found in about one-fourth of 400 foodstuffs collected from different markets in Calcutta, according to a study by the All India Institute of Hygiene and Public Health (AIHPH) and the Central Food Laboratory (CFL).

Tissues of 100 fatal accident victims analysed by the laboratory showed pesticide residues in 27 cases, according to the study reported in the Indian Journal of Medical Research.

The study carried out by Drs. D. Mukherjee and B.N. Ghosh of AIHPH, and

Dr. J. Chakroborty and Dr. B.R. Roy of CFL in animal products, cereals and vegetables.

None of the 10 samples of beverage tested was positive for pesticides while two pond water samples were positive.

Out of the 95 food samples positive for pesticides malathion was detected in 44, lindane in 27 and DDT in 24, the report said. Thirty-five of the 95 samples exceeded the tolerance limit set by the World Health Organisation.

The detection rate observed in Calcutta was however less than that found in Hyderabad, Punjab, Pantnagar, Mysore and Ludhiana, the report said.

It is said that food samples collected in winter had more pesticides left than those collected in rainy season.

In human tissues pesticides residues were found in fat, kidney, and liver samples but not in spleen or brain. The concentrations were, however, well below those observed in developed countries.
(Protein Foods and Nutrition Development Association of India Newsletter No. 55; 1980; 1)

174 Chocolate and dental caries

A study of 3,000 thirteen year old Scottish children classified on the basis of quantities of chocolate consumed found no correlation between chocolate consumption and dental caries. This finding was further supported by a recent study at the Eastman Dental Center in Rochester, New York, in which milk chocolate and chocolate chip cookies were found to be among the snack foods contributing least to dental decay.
(India Cocoa, Arecanut & Spices J. 4(1); 1980; 17)

175 Ciguetera poisoning by fish

A serious form of fish poisoning which afflicts many tropical islands has been studied by scientists of the South Pacific Commission. Although the extent of this poisoning, known as ciguetera, is not clearly understood, as many cases go unrecorded, several thousand cases in Pacific Islands are reported to the commission every year and there are indications of ciguetera increasing. Observations on 3,009 cases of ciguetera poisoning during 1964-1977 showed that one third of these pateints were confined to bed. Nearly 90% of them showed neurological symptoms, such as numbness and tingling of the hands, cold objects feeling hot to the touch, dizziness and difficulty with

balance. Patients with ciguetera poisoning usually developed symptoms less than 24 hours after ingesting fish, nearly 77% of them within 12 hours. Those who have been poisoned multiple times by ciguetera appeared to suffer a clinically more severe illness than those experiencing it for the first time.

The fish poisoning has been proved to originate with a microscopic dinoflagellate which lives around corals. It is ingested with the food of a number of small and intermediate sized fish, some of them eaten by man. But it is more dangerous when these fishes in turn are eaten by others. By this the ciguatoxin becomes more concentrated.

(Marine Fisheries Information Service. No. 18, 1980; 12-3)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

176 New cottonseed processing expelling plant

Madras Vanaspathi Ltd. which manufactures vanaspathi and refined oil is setting up a cotton seed processing and expelling plant at Villupuram. The new plant will make available 15 tonnes of cottonseed oil per day, which is expected to meet more than the requirement of the vanaspathi factory, and the extra five tonnes will be sold as refined oil.

With the Government ban on the usage of groundnut oil in vanaspathi manufacture other indigenous oils were used in varying percentages and the deficit used to be made up by importing oil. Now that cottonseed oil is used to the extent of 80 and even 90 per cent in vanaspathis, cotton cultivation has increased, resulting in the import of oil being slashed to 50 per cent.

(Chemical Age of India 31(7); 1980; 779)

177 Freeze-dried coffee unit to be set up

India will have its first freeze-dried coffee unit and an accompanying decaffinated plant in the next few months.

There are several firms in India producing what is known as "Instant Coffee" relying on the spraying method but the latest "freeze-dry" technique is yet to be tried.

Negotiations for the freeze-dried unit to be set up in India were concluded here earlier this week by Mr. M. Venkataratnam, Chairman of the Coffee Board, with an American food processing company. As the bulk of the coffee

crop is grown in South India, the unit will be set up there.
(*The Hindu. February 24, 1981; 5*)

178 Collaboration for new industry

Joint-venture partner sought to manufacture 5,000 to 10,000 tons per year of canned fruit juice for export markets from a free trade zone. N.K. Bharadwaj, Executive Director, State Trading Corporation of India Ltd., Chandra Lok, 26, Janpath, New Delhi 110 001.
(*United Nations Industrial Development Organization. No. 149; 1980; 5*)

179 Council for advancement of rural technology

The Government proposes to set up a council for advancement rural technology (CART), the Minister of State for Rural Reconstruction, Mr.Baleswar Ram, told the Lok Sabha today.

Its functions will be:

To act as the national nodal point for coordination of efforts at development and dissemination of rural technology for all sectors other than those covered by ICAR and its sister bodies.

To act as a catalyst for development of appropriate technology for the rural areas by identifying the crucial problems encountered by the rural people and funding research and development efforts by different organisations.

To strengthen existing institutions of research and development or set up new institutions.

To act as a clearing house of information and a data bank.

To disseminate knowledge on rural technology to manufacturers of tools and equipment.

To act as a conduct for transfer of appropriate technology.

To conduct or sponsor training programmes for trainers and researchers.

To carry out research studies, surveys and evaluation, etc. on the use of appropriate technology.

The Planning Commission has approved of the scheme.

The formalities are now being gone through and it is hoped the council will be constituted within the next two to three months.
(*The Hindu, March 31, 1981, 11*)

180 Automatic translation device

The Indian National Scientific Documentation Centre (CSIR), New Delhi is experimenting on automatic translation from one language to another.

The INSDOC scientists have fed the computer with Hindi and Bengali equivalents of 83 words achieving first word-to-word translation and then translation of sentences with similar and dissimilar structures in the two languages. Similarly, the scientists have experimented with machine translation of 500 entries in English and German fed into the computer.
(Technology Awareness Service. 5(4); 1980; 70-1)

PERSONALIA

Nil

INDEX

Additive, Food
  Regulation 171
Adsorbent filter powder for cooking oil 109
Adulteration, Food
  Regulation 160-5
Algae used in production, sodium alginate powder 106
Arecanut, production 143
Ascorbic acid, quantitative analysis 134

Banana, production 141
Boiler, regulation 157
Bottle cork - synthetic for wine 130
Bottle neck labelling use of casein 131

Casein used for bottleneck labelling 131
Cashewnut
  Export 147
  Import 150
  Production 142
Cassava see Tapioca
Cellukork for wine bottle 130
Charcoal grilled meat flavour 103
Chocolate effect on dental hygiene 174
Chocolate, nutritive value 114
Cleaner/Degreaser removes food residues 117
Cleaner-multipurpose removes food residues 118
Coconut, regulation 156
Coffee/Tea pot 115
Coffee, freeze-dried
  New industry 177
Coffee-instant
  Customs duty, regulation 169
Committee for fixing vegetable prices 146
Container, food
  Leak detector 132
Cottonseed processing plant 176
Customs duty, regulation
  Dry fruits 166
  Groundnut 167
  Instant Coffee 169
  Turmeric 168

Degreening of Fruit
  Humidity control 97
Dispenser unit for retort processing indicators 138
Dissolved oxygen indicator 135
Drier
  Fluid bed for cattle blood 124
  Solar for Fruit/Vegetable 123
Dry fruit
  Customs duty, regulation 166

Encapsulated maple flavour 102
Enzyme system for Jam/Jelly 100
Excise duty on tapioca starch 148
Excise duty, regulation
  Sterilized miltone 170
Export, Cashewnut 147

Fat converted to protein 110
Ferrocement storage bin 96
Fish, poisoning 175
Fish, sewage-fed 95
Flavour
  Maple 102
  Meat, charcoal grilled 103
Flavouring, Textured soy protein 101
Fruit degreening
  Humidity control 97
Fruit juice, canned
  New Industry 178
Fruit/vegetable, Solar dryer 123

Grain damage, Detection 98
Grain drying, Microwave technique 111
Grain moisture analyzer 137
Groundnut
  Customs duty, regulation 167
Guargum, production 140

Heat exchanger for stick food 120
Heat exchanger, spiral plate for food industry 121
Homogenizer for milk/ice cream industry 119

Humidity, Degreening room 97

Import, cashew nut 150
Industrail wiper for food processing 116
Iron powder, food grade 105

Jam/Jelly
  Enzyme system 100

Leak detector
  food containers 132
  food packages 133
Liquid chiller - low temperatured 122

Maple flavour, encapsulated 102
Meat, vacuum/gas packaging machine 127

Meat flavour, charcoal grilled 103
Meat/Ice cream industry, homogeniser 119

Moisture content analyser, grain 137

Nutrition-infant *improved by* breast feeding slogans 153

Oil *addition of* adsorbent filter powder 109
Oil, edible *from* Cimarouba glanca 94
Oil, edible *from* whey 113

Packaging, food
  Leak detection 132, 133
Packaging machine *for* vacuum/gas packaging 127
Packaging material, food
  Paper board 129
  Plastic 129
  Soft-shell 125
Packaging system *for* dry/frozen food 128
Paper board packages *for* rice wine 129

Pesticide residue. Food
  Detection 173
Plastic packages *for* rice wine 129
Pouch sealing machine 126
Production
  Arecanut 143
  Banana 141
  Cashewnut 142
  Guargum 140
  Tapioca 144
  Turmeric 145
Protein *from* fat 110

Regulation
  Boiler 157
  Coconut 156
  Customs duty 166-9
  Excise duty 170
  Food additive 171
  Food adulteration 160-5
  Rice milling industry 154-5
  Vegetable oil 159
  Water pollution 158
Rice husk *to make* roof boards 112
Rice milling industry, Regulation 154-5
Rice wine, paper board packages 129
Rodent control *use of* poison powder 99
Roof boards *from* rice husk 112
Rural technology, Advancement council 179

Safety, Food
  Additive 151
  Irradiation process 152
Sealing machine *for* food pouches 126
Sodium alginate powder *from* algae 106
Soft shell - a new packaging material 125

Solar drier *for* fruit/vegetable 123
Soy protein-textured, flavouring 101
Storage bin-ferrocement 96
Sweetener
  Thaumatin 107
Sweetner *from* whey 108

Tapioca, production 144
Tapioca starch, excise duty 148
Tea/Coffee pot 115
Texture analyzer, food 136
Textured soy protein, flavouring 101
Thermoform/fill/seal packaging machine 127

Thaumatin - a sweetener 107
Translation device - automatic 180
Turmeric
  Customs duty, regulation 168
  Production 145

Vacuum/gas packaging machine *for* meat 127
Vegetable, price fixing committee 146
Vegetable/Fruit, solar drier 123
Vegetable oil, regulation 159

Water pollution, regulation 158
Wheat, per capita availability 139
Whey protein powder 104
Whey *used for* sweetener production 108
Whey, ultrafiltration *to make* oil 113
Wine *from* rice
  Paperboard packages 129

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CONTENTS

1. RAW MATERIALS ... 93

2. STORAGE AND INFESTATION CONTROL ... 93

3. FOOD ADDITIVES ... 96

4. PROCESSES ... 97

5. BYPRODUCTS AND WASTE UTILIZATION ... 99

6. PROCESSED PRODUCTS ... 101

7. EQUIPMENT AND MACHINERY ... 102

8. PACKAGING ... 112

9. ANALYSIS ... 114

10. COMMERCIAL INTELLIGENCE ... 118

11. FOOD REGULATION, QUALITY CONTROL AND HYGIENE ... 128

12. TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES ... 139

13. PERSONALIA ... -

RAW MATERIALS

181 New forms of life - patenting

New life-forms developed via genetic engineering can be patented, ruled the U.S. Supreme Court on June 16, by a narrow 5-4 margin. But some government officials and industry executives say that the decision may not make much difference to the microbiology industry. The reason: the technology would have advanced anyway.

More than 100 patent applications are in the pipeline, and have been awaiting the high court's ruling on whether patent law covers manmade living organisms. Yet almost every week there is an announcement of a new microbe formed by gene-splicing.

And some industry officials believe that patent ownership is not the key to commercial success, anyway. The president of one firm engaged in genetic engineering says that obtaining a foremost position in the field "will depend more on keeping trade secrets and in-house scientific teams intact than on holding patents."

(Chemical Engineering. 87(13); 1980; 41)

STORAGE AND INFESTATION CONTROL

182 Paddy straw and mud structure for storage of food grains

This indoor type unit constructed from paddy straw and mud has a storage capacity of 400 kg. The rat and moisture proof brick masonary base of the storage structure is above 500 mm from the ground level. A polythene sheet of 600 gauge is used by embedding it in the base to prevent entry of subsoil moisture into the structure. It is constructed once preconstructed base, employing paddy straw rope coated with specially prepared mud having chaffed straw of wheat or paddy called 'Bhusa'. Layer of rope is laid one over the other in a circular manner upto the desired height. Then it is plastered on both sides with mud (Special type of mud containing 2 kg of 'Bhusa' and one cu.ft. of soil, mixed thoroughly with water, kneaded and left for 8-10 days for complete decomposition of Bhusa). On the external side the storage structure is plastered with specially prepared water proof mud plaster (2 kg liquid bitumen and with 0.25 kg wax in the prepared mud). A final coating is given of cow dung and soil 50:50 (and adding 2 kg liquid bitumen for every one cu.ft. of mixture prepared). Otherwise, another bituminous water proofing is needed. Janatha emulsion (mixed

with mud at 5% of dry soil) may also be used. The construction cost of this bin has been worked out to be Rs. 184 per storage structure. The structure was found to be proof against rat moisture as well as insects. Wheat stored in the storage structure showed 0.5-1.0% of weeviled grains during 8 month storage while the germination percentage decreased from 97.0 to 90.0%, but it was free from fungal contamination.
(Bulletin of Grain Technology 17(3); 1979; 222-227)

183 Improved mud brick silo for storing grain

The "Northern Ghana Mud Silo" as it was originally called was initially developed by a joint Ghanaian/West German project team at the Garu Agricultural Station in the Upper Region of Ghana. Their principal objective was to improve the traditional mud silo by making it more air tight and durable yet without raising the low construction and operating costs. With certain modifications, this model could be adopted for use in other regions, especially where humidity was a factor and when rocks were not available as a building material, some changes are given in this article. Although these changes increased the cost a little in comparison to the original Northern Ghana design, the improved version is still much cheaper, in terms of increased efficiency, than a one ton cement silo or one ton's worth of metal barrel storage. A silo with a 200 m interior height and a 100 m interior diameter will need 325 bricks. Instructions for how to construct this mud brick silo with diagrams and details of construction are available from the information brochure.
(Appropriate Technology 7(2); 1980; 6-8)

184 CRI low cost grain storage bin

As part of its efforts towards building with low cost rural materials CRI has developed a low cost grain storage bin which almost eliminates costly and conventional construction materials, such as burnt clay bricks, steel, timber and cement, and emphasize the use of locally available materials such as soil, sand-stone slabs, secondary timber species and agricultural wastes. Only a meagre quantity of costlier materials is envisaged essentially for improving the properties of locally available materials. The use of skilled labour is minimised and self-help is encouraged.
(Chemical Age of India 31(8); 1980; 258)

185 Cheap extended storage of meat

A cheap and simple method could greatly increase the storage life of meat without recourse to freezing has been developed at the Swedish Meat Research Institute, reports the Swedish Board for Technical Development (STU) which has given financial support to the project.

The method provides for fresh meat to be exposed to 100 per cent carbon dioxide in packagings, containers or store rooms. This cheap gas greatly inhibits the spread of harmful bacteria while having no effect on beneficial lactic acid bacteria. One minor drawback is that meat takes on a greyish colour but this vanishes when it is once more exposed to oxygen.

The method allows the storage life of fresh meat to be extended fivefold, it is stated, but a much greater prolongation can be obtained by raising the atmospheric pressure to five atg. In this manner fresh pork could be stored without deterioration for 120 days instead of the usual 10 days.

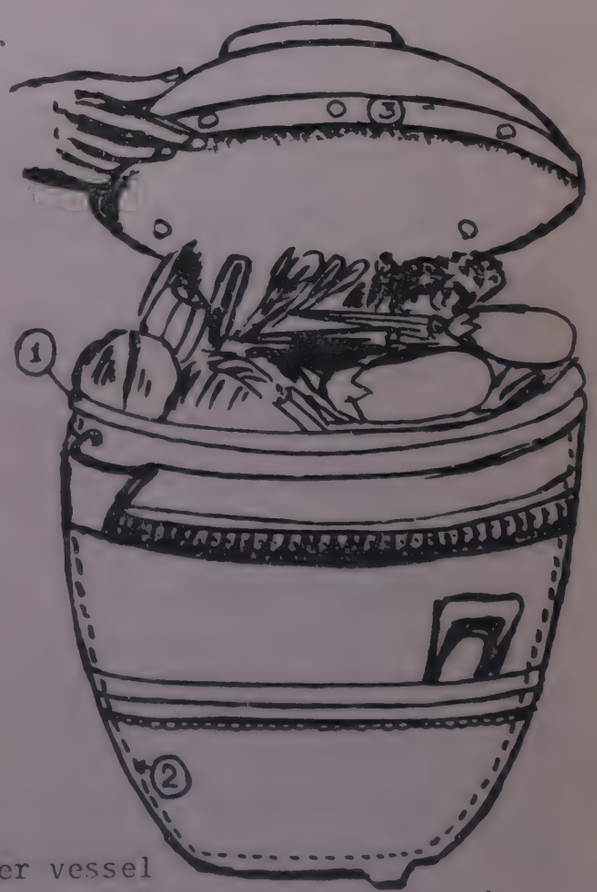
The method-the principle of which has been known for a century - has aroused considerable interest on the part of meat exporters in the U.S., Australia and New Zealand.

(The Hindu, 24 June 1981; p 18)

186 Shital Pot : A low cost mud refrigerator

Shital pot is a simple and less expensive device to store perishable foods. Vegetable stored in it can remain fresh for three to four days. The pot can easily be made by the village potter, it is one day work for one artisan, costing Rs. 15 to 20 per pot.

Shital pot consists of three parts : (1) An outer pot in which water is stored; (2) an inner pot placed inside the outer pot on a small day stand and (3) a detachable perforated mud lid placed on the top of the outer pot. As the water poured in between the outer and inner pots



1. Outer vessel
2. Inner vessel
3. Detachable perforated lid

gets evaporated, the temperature inside the inner pot is lowered. This keeps the atmosphere cool; thus vegetables would also cool.
(*Science for villages 40; Feb. 1981; p 6-7*)

FOOD ADDITIVES

187 A mon- and diglyceride emulsifier

DUR-LO, a mono- and diglyceride emulsifier used for reducing the fat content in various food products has been introduced by Durkee Industrial Foods and Group/SCM Corp. The product made from pure vegetable oil, is low in alpha mono content and relatively high in diglyceride content.

It can be used to reduce the fat used in cake or dry mixes, leading to fewer calories and a reduced cost. The product is available in poly-lined 50 lb cartons. It requires no refrigeration; storage life at 70-80 F is six months.
(*Baker's Digest 54(3); 1980; 53*)

188 Peanut butter flavour

A new natural peanut butter flavour that could lower manufacturers' food processing costs by reducing the amount of actual peanuts or peanut butter used in food products has been developed by Ottens Flavours.

The new peanut butter flavour made from pure peanut extract and other natural ingredients, can be added to a variety of baked goods, snack foods and confectionery products including crackers, cookies, fillings and candies. The spray dried version is ideal for use in dry mixes and other convenience foods. The new flavour can be used as either a peanut butter extender or as a full flavour agent to give an overall flavour and enhancement to the finished food product. If used as a full flavour agent, the end product should contain one to two percent of Ottens new peanut butter flavour.
(*Baker's Digest 54(3); 1980; 52*)

189 Peanut butter flavour enhancer

International Bakers Services, Inc., has announced the development of a new peanut butter flavour enhancer for use in a variety of baked foods. The new flavour has been designed to improve the over all quality of sweet foods, and for example, will serve to extend the shelf life of peanut butter cookies. It comes in a dry form and can also be used in any product that contains natural peanut butter for a richer flavour and aroma. Recommended usage in cookies is 4 oz for 100 lb batch.
(*Baker's Digest 54(2); 1980; 55*)

190 Peanut butter stabilizer

Durkee Industrial Foods Group/SCM Corp. has introduced Durkee peanut butter stabilizers, used to stabilize the free oil in ground peanuts and to provide a finished product of good appearance and uniform consistency.

They include : Durkee 07, made from partially hydrogenated cottonseed oil, Durkee 27, made from partially hydrogenated palm oil and Dur-Em 127, a-mono and diglyceride All of these stabilizers are available in bead form which can be metered, either alone or mixed with other additives, into a grinder with a vibrating screw - type feeder.

They are functional at low levels, so seasoning ingredients such as salt and sweetener may be easily added.

(Baker's Digest 54(3); 1980; 52)

191 Dough strengthener/bread softener

A dough strengthener and a combination dough strengthener and bread softener have been introduced by Eastman Chemical Products, Inc. Both of the new conditioners are powdered succinylated monoglycerides and distilled monoglycerides prepared from edible vegetable oil. They exhibit quick wetting during the mixing process.

Myvatex Do Control Strengthener imparts improved strength, volume and grain to bread, buns and sweet doughs as well as conventional sponge-dough systems. The second product, Myvatex Duo Strengthener and Softener, provides a good balance of dough strengthener and bread softener in one easily dispersed product. It can be added directly to bread dough or sponge to impart strength, volume and softness.

(Baker's Digest 54(3); 1980; 52)

PROCESSES

192 Tartaric acid from tamarind leaves

Regional Research Laboratory, Jorhat demonstrated successfully the process for the production of tartaric acid from tamarind leaves to M/s Karnataka State Forest Industries Limited, Bangalore. The tartaric acid has a wide application in pharmaceutical and food industries. The entire demand of our country over 500 tonnes per annum are being imported.

The conventional process for its manufacture is as a by-product from wine industry. But, in our country very little wines are produced, therefore, it is not possible to exploit this source. However, an alternate source for the

production of tartaric acid is tamarind leaves. The leaves contain 4 to 10 per cent of tartaric acid depending on location of tamarind plantations and the quality of the leaves.

The process developed by the Laboratory consists of digestion of leaves under suitable conditions, the precipitation of the mother liquor as calcium tartrate, breakdown of the calcium tartrate, decolourisation and crystalisation. All the raw materials and the equipments for a tartaric acid plant can be procured from within the country. In the first phase the KSFIC will produce 100 tonnes of tartaric acid per annum. It is expected that the factory will go into full stream within the first quarter of 1981.

(*RRL News, Jorhat 3(12); 1980; p 1*)

193 Synthetic cystine

Two novel processes for the production of the amino acids, cystine and tryptophan, have been developed by Japan's Showa Denko. The firm's new cystine process uses an eight-step synthetic method starting from acetaldehyde. Showa Denko says that the new synthetic technique, which is the first of its kind, will make constant supplies of cystine available. The material is conventionally obtained from human hair and finds use in cosmetics, pharmaceuticals and as a food additive.

Showa Denko plans to start test marketing of the synthetic cystine soon, followed by full-scale sales early next year. The company estimates that sales could reach 200 ton/year, valued at Yen 2.3 billion. The new technology will be profitable, says the firm, as long as the current market prices of Yen 15,000/kg. for the pharmaceutical grade is maintained.

Globally, some 700 ton/year of cystine are produced. This includes a Japanese contribution of 300 ton/year of the sulphur-containing amino acid.

Showa Denko has also announced a new low-cost method for the production of tryptophan which features fermentation technology using a hay bacillus and chemical modification incorporating the use of an unnamed petro-chemical feed stock The firm hopes to use the combination technology to produce tryptophan as an animal feedstuff additive by the end of the year.

World wide approval of the material by Governmental regulatory agencies could provide a total demand of around 30,000 ton/year.

(*Indian Chemical Journal 15(8); 1981; 21*)

194 Dehydrated drying system for fish products

A Japanese company has developed the Dehydrated Dryer System (D-D System) for drying fish, vegetables and other materials. With the help of the machine, high quality natural colour dried products with good taste can be produced. The principle of the D-D System is that the dry air extracts water contained in the material under the process as it circulates in the system, and the moisture in the air is condensed when the humid air is cooled by the evaporator. The moisture thus condensed into water is then drained out of the system. Meanwhile the dehydrated air heated by the condenser and the relative humidity of the air becomes low. Such air goes back into the drying room to repeat the same action. (*Spices Newsletter 15(4); 1981; 4*)

BYPRODUCTS AND WASTE UTILIZATION

195 Energy from coconut wastes

The Central Fuel Research Institute, Dhanbad, Bihar has developed a process for the production of activated charcoal from coconut shell, manufacture of shell flour for use as a compound filler for the synthetic resin glues and as extender for phenollic moulding powder. Coconut residues hold promise as a vast renewable resource for meeting the fuel and material needs particularly as a substitute for steel, concrete, polymer and as composites for chemical industries. (*Science for Villages No. 40; February 1981; 9*)

196 Energy from grape waste

Austrian scientists have found energy uses for the skin, seeds and stems of grapes after the fruit has been crushed for wine making. Each tonne of grapes can produce energy whose fuel value has been found to be higher than that of wood.

The scientists have identified more than 20 yeasts, fungi and microorganisms which can digest the wastage from wine making. Sugar in grape skins and stems left over after pressing can be converted into energy in the early stages of digestion when there is sufficient air available in the mounds of grape marc. (*Chemical Age of India 31(9); 1980; 1018*)

Molecular sieves from paddy husk

In view of the increasing demand for molecular sieves in industry, Regional Research Laboratory, Jorhat undertook the developmental work on the synthesis and evaluation of molecular sieves to discover methods for their preparation from indigenous sources. The Laboratory has successfully developed a process for the synthesis of type A and type X molecular sieves in which paddy husk, an agro-industrial waste, is used as the source of silica.

Molecular sieves are porous crystalline alumino-silicates of the zeolite mineral group. Their chemical composition is generally expressed by the formula $M_2/nO.\ Al_2O_3.\ X\ SiO_2.\ YH_2O$. When dehydrated they contain an appreciable intra-crystalline volume, formed of uniform channels, inter-connected by uniform pores of the order of a few angstroms. The intra-crystalline volume is accessible only to those molecules that possess dimensions which permit ready passage through the pores. This unique property makes it possible to achieve separation of molecules based on their size differences and is aptly described by the term "molecular sieve".

Molecular sieves have emerged as a new class of efficient adsorbents and catalysts. These can be regenerated readily, show high water adsorption capacity even at very low humidity and possess longer life as compared to the alternative materials such as active alumina, active carbon or silica gel. Also, corrosion, fouling safety and material handling problems invariably associated with the wet processes such as scrubbing, extraction or absorption are virtually absent in case of molecular sieves.

Molecular sieves find various applications in chemical, petrochemical and gas industries as adsorbents for dessication, drying, bulk separation and recovery of gases and liquids. Molecular sieves are also used as catalysts and catalyst supports in several chemical and petrochemical processes. Due to their high activity and better product selectivity molecular sieve catalysts are now being used in modern petrochemical industries in place of the conventional silica-alumina catalysts.

Molecular sieves are normally prepared from highly alkaline heterogenous aluminosilicate gels obtained by mixing various silica and alumina containing substances. Several types of molecular sieves have been synthesised and characterized by their chemical composition, crystal structure, pore-size and other physicochemical properties. Most of the information regarding their synthesis, however, is guarded by patents. The most frequently used molecular sieves available commercially are type A, type X and type Y of the Linde Division of Union Carbide Corporation, USA.

The process comprises of extraction of silica form paddy husk as sodium silicate by using sodium hydroxide, mixing the extract with definite proportions of sodium aluminate under suitable conditions to prepare aluminosilicate gel which is then crystallised under normal pressure and suitable temperatures to produce the desired molecular sieve powder.

The developed products are comparable in their structure, thermal stability, water adsorption and molecular separation characteristics to the commercial grade Linde Molecular Sieves.

The process has been referred to NRDC of India for licensing to interested parties.

(RRL News, Jorhat 4(7); 1980; p 1)

198 Bamboo-bed anaerobic digester for biogas production

The Thailand Institute of Scientific and Technological Research has developed a high-capacity digester for biogas production at a lower construction cost than one in conventional use. The new model digester is packed with bamboo rings; bacteria develop on the digester's skin in a thick black slime, thus increasing the number of bacteria in the digester. The organic matter can then be digested much more quickly than in a conventional digester. While producing the same amount of gas, the new digester is half the size of a common digester. The construction cost is about 30 per cent lower.

The model is most suitable for rural areas where biogas production has not developed as rapidly because of the high cost of digester construction.

(UNIDO Newsletter No. 155 March 1981; 3)

PROCESSED PRODUCTS

199 Cold tea in bottles

Tea whose popularity as a hot beverage is world-wide is now making a bid to become equally popular as a bottled carbonated cool drink. A new soft drink developed from black tea by the Tea Research Station of the United Planters Association of South India (UPASI) at Chincona in Tamil Nadu, is scheduled to be test-marketed shortly in Delhi and Bombay.

Laboratory studies have shown that the brew is stable for over a year at different temperatures. A number of prominent visitors to the station have tasted it and found it quite acceptable. Besides instant tea, tea with different flavours had been developed. The production cost of the new product has been worked out at 70 paise a bottle.

(Hindu 27th April, 1981; p 11)

200 Paddy harvester

The Central Mechanical Engineering Research Institute has designed and developed a self-propelled harvesting machine that can be drawn by a small diesel/petrol engine. The machine has received wide appreciation from the industry as a feasible rural development.

(Technology Awareness Service 6(2); 1980; 38)

201 Canadian designed blancher saves energy

A new commercial scale blancher, developed by Agriculture Canada scientists in Nova Scotia, promises energy savings for the vegetable freezing industry.

The new blancher, uses a steam process and requires only one-tenth as much energy as conventional systems.

The K-2 blanched five pounds of vegetables for every pound of steam. Conventional systems process only about one-half pound of vegetables with an equivalent amount of steam. The new system also brought big reductions in effluent production.

The K-2 yielded 60 gal. per hour of effluent, one-fifth the amount produced by a water blancher operating at a comparable capacity. The effluent from both systems was equally rich in nutrients.

Another major advantage of the new system is that it allows faster freezing; freezing capacity is doubled, compared to conventional systems.

With the K-2, vegetables pass through a valve and into a sealed steam cabinet. Steam is then blasted through a single layer of vegetables: because the cabinet is sealed, steam can be recirculated. The vegetables then move through another valve into a holding area. For about one minute, heat is allowed to penetrate to the centre of the vegetables. The vegetables then pass through an air cooler, which dries surface moisture. The next step, freezing, can be done quickly because the vegetables are nearly dry.

In most conventional systems, vegetables are still dripping with water when they are moved into the freezer.

A lot of energy can be wasted in the freezer, because the unit is freezing water as well as vegetables. A layer of ice on vegetables acts as insulation.

(Food Trade Review 50(7); 1980; 368)

202 Improved arecanut cutter

Anadi Charana Ojha, a black-smith of District Balasore in Orissa, has invented a single-hand-operated arecanut cutter which combines the advantages of speed, increased production and safety. The machine is simple in construction, light in weight, and easy to operate. It consists of a tubular hopper into which the nuts are loaded one above the other. The shear blade, held between two vertical columns, is fixed at one end by a pin which acts as a fulcrum; a loaded spring brings the blade back to its original position after each act. A lever operated ram (pusher) placed at the bottom of the hopper at right angles to the blade pushes one nut at a time against the blade for chopping. Finely cut pieces of nuts are collected in a trough. The device obviates the need to place the nuts below the shearing blades by fingers and thus lessens the chance of injury. The know-how is available for commercial exploitation.
(Protein Foods and Nutrition Development Association of India Newsletter No.14; April 1981; 1)

203 Potato grading machine

Based on experience gained in the country's main potato-growing areas a British company has introduced an electrically powered grading machine which grades potatoes into sizes quickly but gently.

The Tong range of four graders features extensive use of rubber on many parts to protect the potatoes against damage.

Each model of the grading machinery is mounted on a chassis fitted with two pneumatic wheels and a tractor drawbar to facilitate movement.

The basic principle of the machine is that the potatoes are fed on to the grader by an elevator and then moved by an endless belt conveyor to a gently agitating screen through which the undersized potatoes and dirt fall. The screen is also an endless belt conveyor which takes the potatoes to another belt or roller conveyor which moves them to a bagging or loading point.

Soil extractors fitted immediately in front of the fed elevator are capable of removing large quantities of soil and loose stones before they reach the screen.

The soil extractor is fitted with a chute under the chain links to convey unwanted material to one side of the machine, so eliminating a build-up of deposite underneath the machine.

The basic machine is available with 610 mm (2 ft) wide screen for outputs of 5 tonnes/hr, or a 915 mm (3 ft) wide screen for outputs of up to 20 tonnes/hr. Screens are available from 19 mm (3/4 in) to 89 mm. (3½ in).
(Sendoc bulletin 8(12); 1980; 16-17)

204 Poultry skinning machine

STEEN III machine can skin whole chickens and turkeys up to 20 lbs, as well as selected parts like breasts, thighs and necks in about 4 seconds.

Unit skins without water or knives. A gathering wheel attached to the machir pulls the skin off and rakes it to the side. Different size wheels can be used for a variety of products such as fish, ham, bacon, etc. Machine can be disassembled, cleaned and reassembled in a few minutes.

(Food Engineering International June 1980; 68)

205 Pilot fermentors

Electrolux pilot fermentors are available in sizes ranging from 20 to 2,000 litres for continuous or batch production under aerobic, anaerobic and pathogenic conditions.

Electrolux fermentors are distinguished by high productivity and excellent ergonomic design. The fermentors are highly automated and can be coupled to computers for process control and product supervision.

The control units are separate from the fermentor vessel. Internal pipework and the pneumatic service system are placed in one cabinet, electronic circuits and basic instruments in another. Additional instruments are contained in other cabinets. Pumps for regulating pH and foam are mounted on a laboratory trolley. Fermentor vessels of various sizes can be connected to the same control unit. In addition, a single temperature control and sterilization program can be used to operate two fermentor vessels simultaneously.

The vessel itself is easy to handle. It is mounted in a wheeled frame and it can be tipped. All internal components such as sparger, baffles and agitators can be easily removed for cleaning or replaced when changing processes.

The Supply unit contains all piping, valves, a flow meter for air, and manometers for steam and water. The basic instrument unit contains electronic equipment for automatic sterilization, temperature control, agitator speed and power control, pH regulation and chemical foam level control. This basic equipment can be complemented by special instrumentation to meet the customer's specific needs.

All fermentor vessel connectors are designed for maximum security against contamination. The entire fermentation system is sterilized in situ.

The fermentation process requires uniform temperature throughout the fermentor vessel. In the Electrolux pilot fermentor, uniform temperature is achieved by circulating the heating/cooling liquid at high speed and by efficient agitation. Temperature can be maintained with high accuracy. The fermentation

temperature is controlled by separately measuring the temperatures of the media and of the heating/cooling liquid. An electronic cascade regulator is used to supervise the fermentation temperature.

The difference in temperature between media and heating/cooling liquid indicates the amount of heat metabolically generated. The regulation of the rapidly circulating liquid provides a continuous picture of the process of metabolic heat generation and ensures accurate temperature control.
(Orbit 2(1); June 1980; 5)

206 New bench-top lab fermentor

A new laboratory fermentor has been developed by NBS that needs no steam autoclave. For the first time, a bench fermentor can be completely and safely sterilized *in situ*, minimizing preparation and handling.

Cells cultivated in this low-cost MicroGen are safely contained in a stainless steel pressure vessel with a working volume of 3 to 12 liters. If no steam supply is available, MicroGen may be connected to a small accessory steam generator, providing sterilization capabilities right where you need it.

MicroGen may be employed in aerobic and anaerobic investigations and for the propagation of animal and plant cell suspensions. To save time and avoid the risk of contamination, an in-line exhaust filter and a harvest/sampling port are steam sterilized *in situ*. The entire fermentor is completely sterilized in a simple procedure that saves time and energy. Internal components are accessible from the front panel.

Seven multi-purpose ports are mounted in the fermentor headplate. Each can be readily adapted for various needs by inserting optional fittings for the addition of liquid and the mounting of electrodes. In addition, a fitting for an optional pH electrode is mounted in the lower side wall of each fermentor vessel.
(NBS Microwaves 14(3); 1981; 2)

207 Prevents brewery corrosion

Ucrete, which combines the exceptionally good corrosion and abrasion resistance of polyurethane resins with the traditional benefits of concrete technology can be used for floors in breweries because it is hygienic, quick-to-lay and cure, and being free from volatile solvents it does not taint food and drink products during the laying period.

Ucrete which is applied by specialist applicators is resistant to attack from beer, yeast and both acidic and alkaline cleaning chemicals. It is therefore being used in many breweries in the U.K. and Europe where a tough, hygienic,

hard wearing slip-resistant floor is required.
(*Anti-Corrosion Methods and Materials* 27(5); 1980; 17)

208 Foam level controller

The Central Scientific Instruments Organisation (CSIO), Chandigarh, has developed foam level controller for use in fermentation processes.

Foam control is accomplished by the addition of sterile chemicia anti-foam agents or by mechanical destruction of foam, or by both. The measuring element is either a capacitance or a conductivity probe . The controller could be of 'on-off' type with built-in time delay to avoid over-charging of the anti-foam agents owing to the slow response of the process.

It has the following salient features: three-tier foam sensing system, time delay between successive charges of anti-foaming liquid and variable 'on-off' time control.

When the foam touches the first level probe, the solenoid opens and admits, for a specified time ('on' time), the anti-foaming oil. Subsequently, 'off' time starts. After the expiry of 'off' time the solenoid operates if the foam is still touching the sensing electrode.

When the foam reaches the second level the equipments 'on' time is doubled and 'off' time is halved. This increases the quantity of anti-foaming oil flow into the fermentor. In the third level, an alarm is given out so that manual corrective action can be made. The 'on' and 'off' times can be varied from 0 to 120s in steps of 20s.

Indication lamps have been provided for each level. Oil monitoring is done by a mechanial counter which indicates the quantity of oil added.

For manufacturing 120 units of foam level controllers, a fixed capital (exclusive of land and building) of Rs. 0.3 lakh and working capital of Rs. 0.75 lakh are needed.
(*Financial Express* 14th June; 1981; p 6)

209 Chinese solar cooker

Relying entirely on local resources such as bamboo and small parabolic mirrors that focus sunlight on a centrally-placed cooker, the Chinese may have solved one of the developing world's most difficult problems-cooking fuel.

The solar cooker is simple. It consists of a collapsible wooden box on an adjustable stand which unfolds horizontally. Inside each half are 396 simple mirrors laid out on a parabolic surface. Sunlight striking the mirrors is focused on the cooker which is mounted on a hardened bamboo tripod attached to the

device. This creates an incandescent light source, the temperature of which may rise high. This enables the device to be used for any kind of cooking, for example, baking bread, boiling vegetables, or heating noodles.

With a total light area of about one square meter, the solar cooker is equivalent in heat energy to an electric oven of 1 kilowatt. Unlike other conventional solar cookers, the Chinese one is designed to prevent the shadows of the cooking utensils from falling upon the center of the collecting surface. If some pieces of the mirror get damaged, they can easily be replaced. Transportation is a simple matter. The cooker can be folded into a portable box, and the whole set weighs only 15 kilos (33 lbs). Construction cost of the cooker is less than US $20.

(League for international food education newsletter Nov. 1980; 2)

210 Flat-plate solar cooker

The Agriculture Tools Research Centre, Bardoli, India, has designed and developed a flat-plate solar cooker which is simple to manufacture and easy to operate.

The cooker is a double-walled box with a double-glass lid. The metal interior of the cooker is blackened and can absorb 95 per cent of the sun's rays which it converts to heat. The air gaps in the box and in the glass lid prevent any heat loss. The temperature inside the cooker is maintained at from 70 to 100 C above the outside atmospheric temperature.

Utensils used for cooking purposes should be of thin metal and should also be blackened on the outside; a light-weight lid is also important. Cooking times and temperatures depend on the type of food and the season as well as on the hour of the day. However, it is essential that a shadow is not cast on the cooker and that the thickness of the food does not exceed 6 cm.

The cooker's efficiency can be increased with the aid of a mirror, equal to the size of the lid, which can be adjusted to reflect the sun's rays into the box. This helps to raise the temperature inside the cooker by 15 to 25 C. In winter the use of the mirror is invaluable.

(Unido newsletter No. 155; March 1981; 3)

211 Solar device for making chappatis

A three-in-one solar device for baking chappatis, cooking rice and for use as a hotplate has been devised by three researchers of the Indian Institute of Technology, New Delhi. The construction of the device would be by application of solar concentrators consisting of mirror strips arranged in a rectangular

frame built of wooden batons. The device, if manufactured on a large scale, would cost between Rs. 300 and Rs. 400 each. The only note of caution was that one should not look into the reflector in the box as that would cause permanent damage to the eye.

(*Times of India. 21st January 1981*)

212 Teflon as cooking aid

Jeewanlal Limited has introduced a Teflon-coated "Crown" Hi-Fri, a product for culinery use. With this wonder product on their shelves, house-wives and cookery experts can cook any type of food without fear of its sticking to the sides of their cooking vessel. The Teflon coating on Crown Hi-Fri makes it non-stick in operation. What is more, very little oil is required to cook in it. And it is very easy to clean.

Backed by the internationally-coveted Du Pont seal of quality, Crown Hi-Fri is the first of the series of Teflon-coated cookware to come. To the consumer the Crown Hi-Fri pan of 200 mm size will be available at Rs. 99 and of 225 mm at Rs. 110.50 per piece.

(*Financial Express 21st June 1981; p 6*)

213 Solar cooking

The dining mess at Centre of Science for Villages, Wardha, harnesses solar energy for half of its cooking. Rice, Dal and (boiled) vegetables are cooked with the help of solar basket. As each cooking is completed within 30-45 minutes turning of basket for proper focussing is not needed care is taken to keep the reflecting surface clean and by keeping the potlid tight in its position. The best time for cooking is from 9.30 A.M. to 12.30 P.M. just the time for hot delicious Lunch from solar basket.

(*Science for Villages 43; 1981; 12*)

214 Solar refrigerator

The Central Salt and Marine Chemicals Research Institute (CSMCRI) at Bhavnagar has designed, fabricated and installed a solar refrigeration unit of one tonne capacity.

According to the CSMCRI sources, the refrigeration unit is the first step towards designing solar-powered cold storages and ice factories for the nonelectrified villages producing perishable goods, like vegetables and fruits. The unit has an array of six solar collectors with mirror boosters for the water circuit.

(*The Times of India 11th January 1981; 9*)

215 Solar powered ice making

The section of Refrigeration Engineering, Department of Mechanical Engineering, University of Delft, The Netherlands has developed the prototype of a solar powered ice making unit. The prototype has been field tested under tropical conditions in Sri Lanka.

The system is the so-called intermittent system, i.e., it operates on solar energy only when the sun is shining. It has two operating cycles : a) a day cycle which consists of a water-ammonia system. A flat plate collector collects solar heat to heat a water-ammonia solution in a vessel. Ammonia evaporates out of the solution and is condensed in another vessel. The condensation of ammonia produces a cooling effect, which is used for ice making; b) a night cycle during which condensed ammonia is heated till vapourisation and reabsorbed in the water-ammonia solution.

When ammonia is condensed, there has to be a system to absorb the heat of condensation. This is best done by circulation of cool water. Air cooling may also be applicable. A flow sheet of the system is shown in Figure 1. With this system 4 to 5 kg of ice were produced per day when the collector area was 2 m^2.

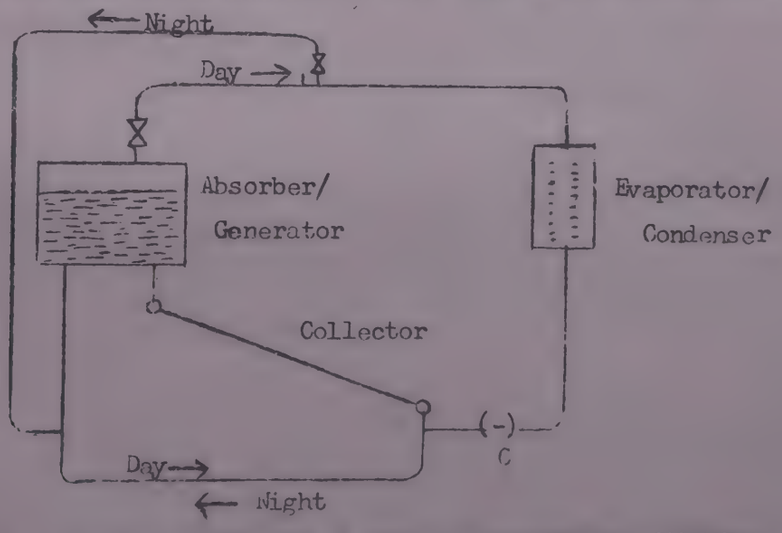


Fig : FLOW SHEET OF A REAL ABSORPTION SYSTEM WITH A SEPARATE SOLAR COLLECTOR CIRCUIT

(RCTT Technical Digest 1(6); 1980; 4-5)

216 Energy saving drum driers

Drum driers serving as contact driers are employed for the energy saving drying of liquids and pasty substances in the chemical and food industries. Escher Wyss manufactures such single-drum driers with heating surfaces of up to 31.4 m^2 and also twin-drum driers with drying areas of up to 37 m^2.

Due to the use of a special cast alloy material, with an appreciably higher heat conductivity than is realized with the cast iron material used for conventional cylinders, it is possible to reach about 20 to 30% higher drying capaci-

ties (depending on the product).

Contact coolers can be employed for the cooling, setting and solidification of viscous solutions, pasty substances and melts. Escher Wyss cooling drums with cooling surfaces of up to 31.4 m^2 are being employed over a wide area.

The driers and coolers are designed in such a way that they meet the hygienic requirements of the food industry.

(*Chemical age of India* 31(9); 1980; 1022)

217 Solar food dehydrator

The "solar food dehydrator" designed by Leandre Poisson, U.S.A. and modified by J.K. Agarwala, AIT, to suit the tropics has been developed at the Asian Institute of Technology. The dehydrator is made from a discarded 200 litre oil drum, polyethylene sheet and wood. The dehydrator keeps the food stuffs out of direct sunlight. It dries the material by moving warm air which is preheated by the curved solar collector. The moisture ladened air then exits out of the exhaust vents. The dehydrators temperature holds at about 100 F on an average sunny day (which is ideal for dehydration). The air temperature can be regulated by opening or closing the vent doors. It will function even on hazy or cloudy days. The axis of the drum is placed north-south so there is no need for any adjustment, as the sun moves across the sky. The solar collecting surface faces the sun equally irrespective of the position of the sun. At the end of a day the partially dried contents need not be removed for fear of rehydrating. By simply closing the vents, the food remains safe overnight.

(*Abstracts on rural development* - CECRI 4(4); 1980; 18)

218 Fish Dryer

At the University of the Philippines at Los Banos' Department of Food Science and Technology, based on surveys conducted in a coastal village market near Los Banos on contents of a series of dryer prototypes and processing conditions were tested and evaluated, resulting in the design presently being field tested. This is a one-tonne capacity, forced-convection dryer, using rice hulls, as fuel source. The cost isapproximately $2500 Canadian. Rice hulls are fed into the furnace, heating the multi-tubed heat exchanger drums. Ambient air is heated as it passes through the heated tubes propelled by the blower (powered by a 5-hp diesel motor) into the plenum chamber, where the baffles direct the hot air upward through the trays of fish, before it is expelled through vents near the roof of the chamber.

Typical conditions required to dry small herring and mackerel (*Sardinella fimbriata* and *Rastrelliger chrysozonus*) to a final moisture content of 40% were

8-10 h drying time with air temperature 54 C, inlet air velocity 30 cm/sec, inlet air relative humidity of approx. 40% and consumption of 10 kg rice hulls per hour. Acceptability tests indicated that the mechanically dried products were comparable with the sun-dried ones, and were found to attract premium prices in the market due to their greater stability (at least 2 months shelf-life for most products). The slightly lighter colour, obtained from the more controlled mechanical process over the normally darker brown sun-dried products was the only characteristic of low preference in the market tests.
(Tropical Fish Processing Newsletter No. 1; April 1981; 4-5)

219 Drying by microwave

The Swiftdry is a new microwave drying instrument which is capable of determining the moisture or solids content of a sample within a few minutes. The equipment incorporates an electronic balance, a microwave drying chamber and a microprocessor digital computer. It works on the principle of uniform and selective heating of water throughout the sample.

The Swiftdry is manufactured by CEM Corporation in America and is distributed in the UK by Astell Hearson.
(Baking Today 1(2); 1980; 59)

220 Vacuum dryers

The Gigavac vacuum dryers, now distributed by Niro Atomizer, can be used for heat-sensitive products hitherto difficult or impossible to dry. The leniency of this process in handling and heating, as well as the speed and accuracy of the heat transfer, allow rapid drying of concentrates and dry delicate products, such as citrus and fruit juices, coffee and pharmaceuticals on a continuous basis with excellent results.
(Food Technology in New Zealand 15(3); 1980; 47)

221 Heat recovery unit saves energy

This heat recovery unit provides hot water at 60 C (140 F) while minimizing energy needs. Capacity of up to 400 litres. Stainless steel pressure containers may be used in any refrigeration operation, i.e. dairies, cold stores, meat plants, etc.

Unit can be integrated into any system of refrigeration, as long as it is not run by capillary tubes.
(Food Engineering International June 1980; 62)

222 Packaging for sliced potatoes

Increasing the shelf-life of sliced potatoes is accomplished by vacuum packaging in a barrier bag. The bag serves as an oxygen barrier and reportedly allows the use of less antioxidants to retain fresh taste, colour, and texture for up to twice as long. The bags also allow processors to improve inventory control, expand distribution, and reduce frequency of delivery.
(Food Technology 34(10); 1980; 96)

223 Harmless milk

A new milk processing and packaging system which permits lactose-intolerant people to drink milk without ill-effects has been developed by Tetra Pak AB, Lund, Swedish manufacturers of containers for milk and other fluids and machinery for their manufacture.

Lactose-milk sugar-is difficult to digest for people who do not have the enzyme lactase in their bodies. This deficiency is common among adults in countries without a milk-drinking tradition. If the millions of undernourished people in the Third World could be made tolerant to lactose, milk could play a key role in their diet. The normal way of overcoming the problem is to add lactase to fresh milk immediately before its consumption. As well as being prohibitively expensive it also calls for the consumer to make the addition himself. Tetra Pak's solution is to add a minute quantity to milk packed in long-life containers, a procedure which causes the lactase to pre-digest the lactose in about 7-10 days.

The milk is subsequently wholly innocuous to the lactose-intolerant consumer and neither quality nor nourishment factors are adversely affected.

Long-life milk, which is flash-sterilized before being packed in aseptic paper cartons, has a shelf-life of fully 4-6 months without refrigeration and can accordingly be transported long distances and stored without problems. The new process, called Tetra Lacta, adds only an "insignificant amount" to the cost of the milk.
(Swedish trade news April 1981; 3-4)

224 Insulated fish box

An insulated six-piece fish box which can overcome some of the defects of conventional boxes has been designed and fabricated at the Central Institute of

Fisheries Technology, Cochin.

Made of galvanised iron sheet and using expanded polystyrene slabs as insulating material, the box can be dismantled for cleaning and returning to the despatching end for re-use.

The advantages of the new box over conventional containers are: In the event of any damage beyond repair, only the damaged pieces need replacement; it gets reduced to 42 per cent of original volume when dismantled and packed compactly, facilitating return of empty box.
(Central Institute of Fisheries Technology, Cochin)

225 Continuous hot air sealer

A continuous hot air sealer capable of sealing a variety of polythene bags and with wide application in industries including food has been developed by Larsen and Toubro Limited.

The continuous hot air sealer is a high production in line machine for sealing pre-made pre-filled polythene bags. The polythene bag duly filled is manually straightened at the unsealed edge and inserted into continuously moving grip belts. The bag moves into a hot air chamber and is plasticised. Further under the pressure of crimp rollers, it is fused and the pattern of the crimp roller is embossed on the bag. When it emerges, the bag is duly sealed and ready for retailing.

The crimp speed is variable from two metres to fourteen metres per minute. Depending on the width of the pouch, the production can be determined accordingly.

The machine is designed to take the smallest and largest bags. The smaller bags are self-supported while the bigger bags travel on a belt which is synchronised with the speed of the sealer.
(Hindu 1st July 1981; p 23)

226 Vegetable glue powder

GT vegetable glue powder eliminates the disadvantages of animal glues including bad odour; poor water and heat resistance; poor flexibility; and higher price. GT glue reportedly forms a bond of 7,000 PSI (490 kg/cm^2) tensile strength (ductile). It is suitable for cellulosic material, damp-proof/waterproof applications, and is water remoistenable.
(Protein Foods and Nutrition Development Association of India Newsletter No.10; March 1981; 1)

227 Bag making machine for thermoplastics

Dilip Engineers have developed Seal Master bag-making machines for various thermoplastic material such as LDPE, HDPE and PP. There is accuracy in sealing and cutting of tubular film. The machine is capable of side sealing, longitudinal sealing, flap making and gussetting. The Seal Master Mark-I accepts 725-mm wide tubular film giving length selection from 50 mm to 1,000 mm, corresponding to productivity of 70 cycles to 20 cycles/minute. Length selection can be done with fine adjustment whilst the machine is running. The machine makes a bottom-sealed bag per stroke.

(Protein Foods and Nutritional Development Association of India Newsletter No.10; March 1981; 1)

228 Laminate packaging machine improved

The Hooper 1000-C is an improved version of a machine that has been the standard in high-speed laminate packaging. Refinements have been made in the flying knife cut off, trim removal, film chain and film registration.

The 1000-C, when used with Cryovac laminates, produces vacuum packages for processed meats, cheeses and other food products at speeds of up to 200 per minute. Product change over takes minutes by combining adjustments for depth and index changes with interchangeable forming and sealing dies.

(Processed Prepared Food 149(5); 1980; 79)

229 Safety bottles available

The manufacturers of glass bottles are now able to provide a product which has a tough, flexible plastic coating bonded to the outside surface. If the bottle is dropped and the glass fractures, the contents are retained within this outer skin so that the broken glass plus contents can be removed safely and dealt with elsewhere.

Safety bottles are more expensive. For laboratories handling hazardous liquids these bottles should be considered as an integral part of the health and safety of the staff concerned and that the additional cost is worth it.

(Koch-Light Digest No.2; August 1980; p 2)

ANALYSIS

230 Mercury analyser

ECIL's Mercury Analyser MA5800A can be used in all laboratories handling

and measuring trace mercury, in environmental and pollution studies. Industrial effluents, mercury in fish, in research agriculture and medicine.

Analytical methods used with the MA5800A for the determination of mercury involve three important steps: (i) sample preparation, (ii) vapour generation and (iii) absorption measurements.

Mercury can be determined in: (i) acids, (2) alkalies, (3) water, (4) fish, kale wheat, peas, ossien and similar agricultural, biological and marine prodcuts (5) air and gases like H_2, N_2, O_2 (in compressed cylindres) and in many other similar investigations. Mercury can be determined in solids, liquids and gases. Only the final sample for analysis in MA5800A should be in liquid form. For solids ECIL supplies the Bethge's apparatus at extra cost. For gases a compressed cylinder filled with the experimental gas, a flow meter and one extra trap are required.

Mercury Analyser MA5800A can be used by (1) environmental and pollution boards and institutional faculties, (2) water pollution and control boards, (3) fisheries research organisations and departments, (4) agricultural research organisations (5) universities and research organisations, (6) industries handling mercury products in manufacture and in effluents like in caustic soda plants, (7) pharmaceutical industries and (8) forensic science laboratories.
(Financial Express 14th June 1981; p 6)

231 Temperature indicating viscometers

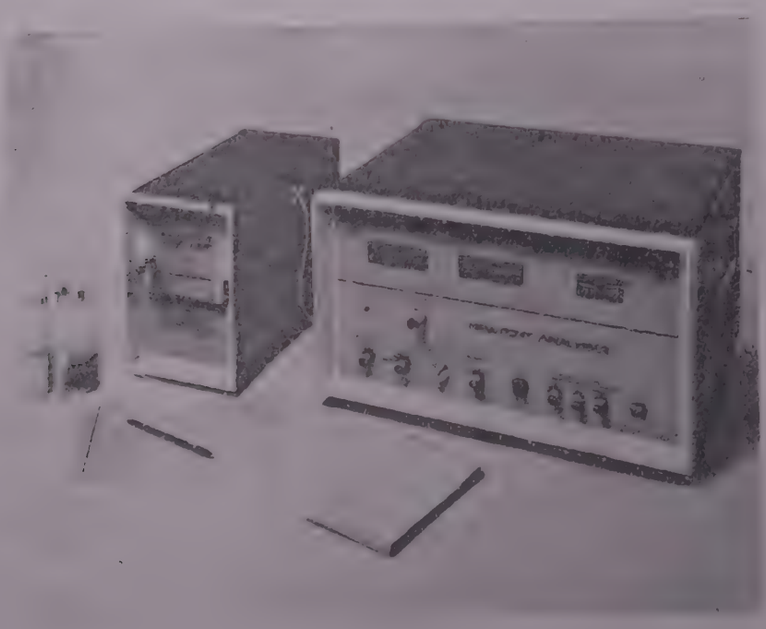
Models 7.010PBD and 7.010C4P display viscosity and temperature measurements alternately and simultaneously record the viscosity and temperature of the liquid. The units feature a stainless steel viscosity sensor which is hermetically sealed. When immersed into the liquid, the unit displays viscosity in 6 linerized bands in the range of 10^{-1} to 10^5 cp. Factors, such as density or density squared may be dialed-in to obtain direct readouts of viscosity in centipoise-density units, centipoise (mpascal-sec), centistokes, and Saybolt Universal seconds.
(Food Technology 34(10); 1980; 90)

232 UV-visible spectrophotometer

The DMS 80 - for use in routine laboratory applications, features simple operational procedures along with microcomputer control. The keyboard has colour-coded touchkeys that give an audible signal when a command is accepted. The instrument gives a direct readout of absorbance, % transmittance, concentration, and first and second derivative modes on 4LEDs. Derivatives with respect to time can be obtained on both the LED readout and a chart recorder. The instrument also features a large sample compartment which will accommodate cells up to 100 mm path length. Spectral bandwidths from 0.2 to 4.0 nm may be selected allowing measurements on gases, liquids or solids.

(Food Technology 34(10); 1980; 90)

233 Measurement of oil, fat or moisture



The Newport Quantity Analyser MK III-A is a continuous wave, nuclear magnetic resonance spectrometer for determination of oil and moisture content in agricultural and food products.

The wide line NMR method has been used as a replacement method for solvent extraction in measuring the oil and fat contentof oil seeds, chocolate, meat and other materials. Other applications include determination of moisture to grain, flour, dough and finished cereal products. It is also used for monitoring solid liquid fat ratio in margarine and fat during production and storing.

This latest model is fitted with an extra control, which varies the amplitude of the field scan (calibrated in terms of gate width). The variable scan width makes it possible to measure a large range of other properties of both solid and

liquid materials. It will also enable determination of oil to be carried out in the presence of moisture. The wide line NMR method enables moisture and oil content to be determined rapidly. The method is accurate for determining the liquid content from 0.05% to 100%. The precision that can be obtained under optimum conditions is ± 0.1%. To increase the precision, the signal is integrated over a period of time. The stability is better than 0.01% per hour under constant conditions (after the initial half hour warm up period). No sample preparation is necessary, but accurate weighing is essential. The minimum detectable signal is 15 mg of oil in 40 ml sample assembly and 2.5 mg of oil in 2 ml assembly. The temperature range is from -20 C to +99.9 C. For temperature below the ambient, it is necessary for the user to have liquid CO_2 as a coolant.
(AIMIL Instrument Bulletin May/June 1980; p 3)

234 Speedy moisture tests

A portable non-electric moisture tester is available from Thomas Ashworth. The company is now introducing the 'Speedy' to food industries. Free moisture in the test material reacts with a sample of calcium carbide to form acetylene gas sealed in a pressure chamber, this gas registers the moisture content on a Bourdon-type pressure guage.
(Baking Today 1(2); 1980; 55)

235 Swiftdry microwave moisture analyser

The new Swiftdry is a microwave drying instrument capable of determining the moisture or solids content of a solid or liquid sample accurately within a few minutes, without removing the sample from the drying chamber.

It comprises an electronic balance, microwave drying chamber and microprocessor digital computer, all incorporated into one instrument. Accuracy and speed is based on the uniform and selective heating of the water throughout the sample.
(Food Trade Review 50(7); 1980; 372)

236 Sterility test unit

PSE sterility test unit is for sterile filtration of small quantities of liquids in a closed system whereby the effluent may be withdrawn from the receiver flask under sterile conditions. Microbiological examination of water, beverages, or pharmaceutical preparations can be made by the unit. A stainless steel flask of 300 ml capacity is clamped to a SS base with SS screen and a filter support. The surfaces are electrically polished. The filter holder

eliminates any points where bacteria can be trapped. The unit can be autoclaved with the membrane filter. Sizes available include: single place, 3 place and 6 place.
(Protein Foods and Nutrition Development Association of India Newsletter No.10; March 1981; 1)

237 An artificial tongue

An 'Artificial Tongue' is described which can be used to calibrate the stimulus delivery characteristics of flow systems for liquid stimuli. The calibrator, which functions on the basis of conductance measurements, is used to ascertain the behaviour of certain test solutions in the flow system. The test solutions are so prepared that they mimic the hydraulic properties of the stimulus solutions to be used. The special apparatus required is neither complex nor costly, and the procedures involved are straight forward.
(The Indian Journal of Nutrition and Dietetics 17(6); 1980; 233)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

238 Final estimate of food grain production in different states of India, 1979-80.

(See Table on the next page)

(Production - in thousand tonnes)

State	Rice	Jowar	Bajra	Maize	Ragi	Small millets	Wheat	Barley	Gram	Tur	Kharif pulses	Rabi pulses
Andhra Pradesh	6,203.3	1,629.1*	265.6*	398.3*	253.5*	261.0	11.4	-	15.3	48.7*	99.9	166.1
Assam	1,876 4	-	-	13.3	-	4.3	69.2*	-	1.7	4.2	-	35.1
Bihar	3,597.9	2.6	2.3	748.7*	79.3*	50.5	1,841.3*	71.2*	119.9*	75.2	91.4	331.4
Gujarat	437.2*	557.4*	1,331.7*	138.6*	41.5*	89.0	1,215.4*	3.1	31.4	87.7	60.2	14.3
Haryana	942.0*	29.0*	281.0*	49.0*	-	-	3,283.0*	98.0*	316.0*	6.1	8.7	15.0
Himachal Pradesh	85.5*	-	-	452.0*	6.3@	15.7@	226.2*	29.1*	25.4@	0.2	12.6	6.7@
Jammu & Kashmir	483.2*	-	10.1	362.6*	-	8.8	203.9*	8.2@	2.3@	-	25.0	2.5@
Karnataka	2,231.2*	1,665,9*	246.0*	444.7*	1,441.9*	203.9	206.1*	-	91.8*	217.4*	256.0	30.1
Kerala	1,282.6*	0.9	-	-	1.1	1.7	-	-	-	0.8	4.5	11.6
Madhya Pradesh	1,777.7*	948.1*	35.8*	478.6*	4.5	172.5	2,224.3*	67.8*	816.8*	205.4*	262.3	176.2
Maharashtra	1,828.5*	5,464.1*	607.1*	116.1*	202.2*	93.5	1,006.0*	7.0	173.4*	411.3*	402.6	50.3
Manipur	227.5	-	-	10.6*	-	-	-	-	0.1@	-	-	1.8@
Meghalaya	124.9	-	-	11.5	-	2.3	2.7	-	0.1	0.5	-	1.3@
Nagaland	76.5@	-	-	9.2@	-	-	-	-	-	-	--	2.3@
Orissa	2,917.7*	15.5	2.4	63.5	106.5	84.7	80.6	-	16.2	39.5	52.6	468.2
Punjab	3,041.0*	0.8	47.0*	672.0*	-	-	7,865.0*	61.0	176.0*	5.0@	10.7	11.5@
Rajasthan	100.1*	133.2*	380.2*	573.6*	-	4.1	2,696.3*	485.2*	730.7*	4.9	62.0	20.2
Tamilnadu	6,229.0*	694.7*	456.5*	23.9	435.1*	293.8	0.7	0.4	6.2	51.9*	164.1	-
Tripura	291.2	-	-	-	-	-	9.0	-	0.1@	0.2	0.8	0.8@
Uttar Pradesh	2,468.3	155.1*	358.1*	940.2*	108.8*	174.2	9,668.6	753.7*	681.6*	553.0*	35.7*	250.0*
West Bengal	5,686.6	0.2@	0.5@	56.8	8.1@	8.4@	785.2*	28.9*	72.1*	25.4	19.0	181.8
Andaman & Nicobar Islands	9.6	-	-	-	-	-	-	-	-	-	-	0.3
Arunachal Pradesh	78.0	-	-	14.0	-	10.3	2.6	-	-	-	-	-
Dadra & Nagar Haveli	11.5*	0.5	-	-	3.9*	0.6	0.3	-	-	1.2	1.2	0.3
Delhi	3.5*	2.7	4.5(E)	0.5	-	-	116.0*	1.9	2.8*	-	-	1.2@
Goa, Daman & Diu	95.2*	-	0.5*	-	6.5*	-	-	-	-	-	-	-
Mizoram	19.5	-	-	0.2	-	-	-	-	-	-	0.2	0.1
Pondicherry	59.8	-	-	-	3.6	0.1	-	-	-	-	-	3.9
All India Total	42,185.4	11,319.8	4,034.2	5,577.9	2,702.8	1,479.4	31,563.8	1,615.5	3,279.9	1,738.6	2,062.4	1,783.0

* Based on the results of crop-cutting surveys.
@ Last years data repeated in the absence of data for 1979-80.
(E) Estimated.

239 All India final estimates of oilseeds and other crops (1979-80)

Crop	Area (Thousand hectares)	Production (Thousand tonnes)
I OILSEEDS		
Groundnut (Nuts in shell)	7,238.2	5,771.8
Castor seed	437.5	232.7
Sesamum	2,384.0	370.7
Rapeseed and Mustard	3,474.7	1,433.1
Linseed	1,640.5	269.7
Nigerseed	575.6	95.8
Safflower	707.9	231.1
Cottonseed*	8,077.5	2,642.5
II OTHER CROPS		
Black pepper	84.91	21.98
Dry chillies	826.3	510.9
Cardamom	89.0	5.3
Coriander	303.6	105.3
Sugarcane (Gur)@	2,666.1	13,330.2
Guarseed (for seed purpose only)	1,827.7	375.7

* Area same as for cotton (lint).

@ Production in terms of cane was 1,27,990.3 thousand tonnes for 1979-80

(*Agricultural Situation in India* 35(9); 1980; 732-734)

240 All India final estimate of black pepper, 1980-81

State	Area (Thousand hectares)	Production (Thousand tonnes)
Karnataka	2.98	0.77
Kerala	107.09	26.52*
Tamilnadu	0.56	0.11
Pondicherry	0.01	0.01
All India	110.64	27.41

* Based on results of crop cutting surveys.

NOTES : (i) Black pepper is not grown to any appreciable extent in other States/Union Territories not mentioned above.

(ii) No information regarding crop estimates is yet available from the Govt. of Sikkim.

(*Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi*)

241 Milk production

The total number of dairy plants in operation, both in the public and co-operative sectors during the year 1980-81 has increased from 190 to 197 with corresponding increase in the daily processing capacity from 6.2 to 6.9 million litres this year. The production of milk powder including milk food for babies registered an increase of 6,000 tonnes a year from 68,000 to 74,000 tonnes.
(Economic and Commercial News 11(14); 1981; 6-7)

242 Major fishes

Oil sardine accounted for 153,971 t forming about 11.09% of the total all India catch during 1979. The other major group of species in the order of abundance are Bombay duck (126,004 t-9.08%) penaeid prawns (113,665t-8.19%), sciaenids (93,018t-6.70%), mackerel (71,514t-5.15%), ribbon fish (71,349t-5.14%), lesser sardines (68,351t-4.92%), non-penaeid prawns (63,917t-4.60%), and silver bellies (55,463t-3.99%).
(Marine Fisheries Information Service No. 22; 1980; 11)

PRODUCTION (INDUSTRIAL)

243 Trend in production and imports of milk powder

('000 MT)

Year	Domestic production	Import of milk powder MFP SMP	Others	Total imports
1977-78	49.90	9.21	4.33	13.54
1978-79	59.60	15.44	6.46	21.90
1979-80	64.00	1.21	18.00	19.21

(Economic Times 13th May 1981; p 4)

244 Vanaspati output

Vanaspati production touched an all-time high of 6.68 lakh tonnes during 1980 representing an increase of eight per cent over that of 1979. The production was higher by about 14,000 tonnes over the previous record production in 1978.
(Oils & Oilseeds Journal 33(7); 1981; 6)

245 Biscuit industry

The biscuit industry has progressed enormously during the past few years with production moving up from 63,800 tonnes in 1971 to around 1 lakh tonnes in 1979. The number of units in the organized sector which stood at 29 in 1965 moved up to 32 in 1979. Capacity utilization in the organized sector has been exceptionally good, improving from 67.7% in 1971 to 85.7% in 1979.

There are a large number of biscuit manufacturing units in the unorganized sector usually linked with bakeries. No estimate of their number or their production is available.

(Industrial News Digest 4(2); 1981; 11)

246 Tinplates

The 3 units manufacturing tinplates in the country are: Rourkela Steel Plants of the Steel Authority of India (SAIL), Tinplate Co. of India Ltd. Jamshedpur and K.R. Steel Union (P) Ltd, Thana (Maharashtra). Their annual licensed capacities are 2 lakh tonnes, 1.6 lakh tonnes and 60,000 tonnes respectively.

However, SAIL, a canalizing agency, has imported 21,589 tonnes of prime tinplate during 1979-80 at an average price of Rs. 5,445/tonne and up to November 1980 it placed orders for import of 21,829 tonnes of prime tinplate at an average price of Rs. 5,992/tonne.

(Industrial News Digest 4(4); 1981; 10)

247 Vanillin production gets a boost in Japan

Ube Industries Ltd., a leading Japanese firm specializing in catechol derivatives, has recently established a big plant to produce vanillin based on guaiacol, with an annual production capacity of 500 tons. Although Ube Industrialized catechol had started production in the 1950s, the production of derivatives has been restricted to P-t-butyl catechol (TBC) for polymerization inhibitors. However, with the parallel production of catechol and hydroquinone based on phenol as the raw material, the company started to make strenuous efforts to develop catechol derivatives - one such derivative being vanillin, based on guaiacol.

(Indian Chemical Journal February 1980; 35-36)

248 Production of tamarind

The annual production of tamarind is estimated at 3 lakh M-tonnes. The major producing states are Andhra Pradesh, Karnataka, Tamilnadu, Kerala, Orissa and Maharashtra.

(*Profodcil Bulletin 15(1); 1980; 25*)

EXPORT

249 Exports of basmati rice

Qty: '000 Metric tonnes
Value : Rs. in lakhs

Year	Quantity	Value
1977-78	10.00	283.18
1978-79	67.10	3153.01
1979-80	47.42	2587.19

The current production of basmati rice in India may be placed at around 250,000 M tonnes.

(*Profodcil Bull 15(1); 1980; 3-4*)

250 Exports of rice bran extractions from India

Year	Quantity (Metric tonnes)	FOB Value (Rs. crores)
1977-78	3,09,000	14.80
1978-79	4,46,000	18.00
1979-80	5,28,000	29.89

(*Oils and oilseeds journal 33(7); 1981; 26*)

251 Egg exports from India

	No. of cartons
1978-1979	7,200
1979-1980	47,369
1980-1981	413,788

Note : With the exception of a few hundred cartons of 360 eggs, most shipments consist of cartons of 180 eggs.

(*Financial Express 16th April 1981; p 9*)

252 Apple exports from India

Year	Quantity (Tonnes)	Value (Rs. Lakhs)	Unit value (Rs. kg.)
1976-77	348.0	12.4	6.56
1977-78	589.9	20.4	3.46
1978-79	10.0	0.6	6.00

(Economic Times 15th April 1981; p 3)

253 Exports of mushrooms

Quantity - M.T.
Value - Rs. in lakhs

Country	1977-78		1978-79	
	Qty.	Value	Qty.	Value
Belgium	0.5	3.58	0.5	3.85
Canada	Neg.	Neg.	0.1	0.64
France	14.0	86.06	15.2	93.50
German F.R.	0.4	2.77	0.6	4.34
Hong Kong	-	-	Neg.	0.08
Kuwait	0.3	0.36	-	-
Switzerland	22.5	126.23	11.0	78.82
USA	0.9	6.02	1.4	9.98
U.K.	0.3	1.60	0.2	0.87
Others	1.0	2.72	1.0	4.55
Total	39.9	229.34	30.0	196.63

(Profodcil Bulletin 15(1); 1980; 42)

254 Export of tamarind

Qty. - M. tonnes
Value - Rs. in lakhs

I. Fresh Tamarind :

Year	Quantity	Value
1976-77	169.8	3.60
1977-78	909.6	26.77
1978-79	3315.2	78.05

II. Dried Tamarind :

Year	Quantity	Value
1976-77	2283.0	65.77
1977-78	3823.9	120.00
1978-79	3187.0	141.61

(Profodcil Bulletin 15(1); 1980; 27)

255 Export ban goes

Government has decided to lift the ban on the export of cottonseed expeller cakes. The export of this item will now be allowed within a limited ceiling through the All India Cottonseed Crushers Association, Bombay. The canalising agency would be responsible to administer the ceiling.

In other changes, Government has brought mineral items of crocidolite and amosite varieties of asbestos within the purview of export control. Their exports would now be allowed on merits. Also brought under export control is China Clay (kolinite), its export would now be allowed under Open General Licence (OGL).

(Hindu 19th April 1981; 6)

256 Importers of dried mushrooms

SWITZERLAND

Demaurex Freres & Cie SA, 6 Avennue de la Concorde CH-1022 Chavannes-Renens	Tel. : (021) 349781 Cable : Demaurexco Telex : 24277
Hackey Importation SA Case Postale 138, CH-4018, Basel	Tel. : (061) 34 22 00 Cable : Hacky Bale Telex : 92987
Hans Lang AG Todistrasse 18, Postfach 349, CH-8027, Zurich	Tel. : (01) 201 25 43 Cable : Granolang Telex : 52733 Lanag CH
Gustav Gerig & Co. AG, Volkmarstrasse 4, CH-8035, Zurich	Tel. : (01) 26 46 24 Cable : Gerigusto Telex : 55305 Gerig CH
Ernest Grundbacher AG, Postfach 63, CH-3097 Liebefeld-Berne	Tel. : (03) 53 18 63 Cable : Gruba Bern Telex : 42 222 Gruba CH
Paul Husi AG P.O. Box 2551 CH-8023 Zurich	Tel. : (01) 23 87 77 Cable : Husipaul Zurich Telex : 53205 Husi CH
Migros-Genossenschafts-Bund Limmatstrasse 152, Postfach-266 CH-8031 Zurich	Tel. : (01) 44 44 11 Cable : Migrosbund Telex : 52167
COOP-Schweiz Thiersteineralle 14 Postfach 1285 CH-4002 Basel	Tel. : (061) 35 50 50 Cable : Coopsuisse Telex : 62133 Coop ch
Aux Planteurs Reunis 2 Avennue Jean Jacques Mercier, CH-1003 Lausanne	Tel. : (021) 20 60 31 Cable : Planteurs Telex : 25193

Lipton SA
Chemin du Closalet,
Case Postale 9
CH-1023 Crissier/VD

Tel. : (021) 34 46 74
Cable : Liptonian
Telex : 24 032

Brugger Handels AG,
Utoqai 41
CH-8008 Zurich

Tel. : (01) 34 40 21
Cable : Bruggercomp
Telex : 52296

Spuhler AG,
Zahrinigerpdatz-11
CH-8021, Zurich

Tel. : (01) 47 01 27

FRANCE

H Antomarchi
83 Rue Dragon,
13006-Marseilles

Tel. : (91) 37 40 96
Telex : 401515 Antomar
Cable : Huilanto

Le Champignon SA,
4 Impasse Mathias,
93121-La Courneuve

Tel. : 833 13 50

(Profodcil Bulletin 15(1); 1980; 40-41)

257 Importers in Japan

FRUITS INCLUDING FRUIT POWDER

Toshoku Ltd.,
4, Nihonbashi Muromachi
2-chome, Chuo-ku,
Tokyo.

Kasho Co. Ltd.,
14-9, Nihombashi 2-chome,
Chuo-ku, Tokyo.

Mitsui & Co., Ltd.,
2-1, Otemachi 1-chome,
Chiyoda-ku, Tokyo.

Yuasa Trading. Ltd.,
No.25 Kowa Bldg., 8-7, Sanbancho,
Chiyoda-ku, Tokyo.

Nichimen Co. Ltd.,
13-1, Kyobashi 1-chome,
Chuo-ku, Tokyo.

Seitaro Arai & Co. Ltd.,
8, Onoe-cho 1-chome, Naka-ku,
Yokohama.

EGG POWDER

Daimatu Kogyo Co. Ltd.,
10-9, Ginza 2-chome, Chuo-ku,
Tokyo

Toshoku Ltd.,
4, Nihombashi Muromachi 2-chome,
Chuo-ku, Tokyo.

Q.P. Corp.
4-13, Shibuya 1-chome,
Shibuya-ku, Tokyo.

(Profodcil Bulletin 15(1); 1980; 47)

258 Importers of Tamarind

State Company of Foodstuff Trading
P.O. Box 548, Baghdad

Fouad N. Elian,
P.O. Box 561, Aleppo

Dabbagh Trading Company,
P.O.Box 1964, Aleppo.

Ahmed Naeim Ahmed
P.O. Box 64, Elghoria Cairo
Hamzawee El Saghir Azhar

Emile H. Faris
P.O. Box 425, Amman

El Nasr Export & Import Co.,
El Nasr Building
28A Talaat Harb Street, Cairo

Inlaks Trading Corporation,
P.O.Box 501, Dubai

(Profodcil Bulletin 15(1); 1980; 27)

259 Importers of Essential Oils, Oleoresins, Fragrance and Flavour in Canada

Bush, Boake, Allen, Co. Ltd.
312 St. Patrick
LaSalle 660 (Montreal), Quebec
H8N 2H2

Felton International, Inc.
601 Garyray Drive
Weston, Ontario
M9L 1P9

Firmenich of Canada Limited
30 Finley Road
Bramalea, Ontario
L6T 1A9

Florasynth Canada Limited
989 Cote Street
Montreal, 128, Quebec

Givaudan (Canada) Limited
60 Overlea
Toronto, Ontario

Griffiths Laboratories Limited
757 Pharmacy Avenue
Scarborough, Ontario
M1L 3J8

Haarmann and Reimer
1355 Aerowood Drive
Toronto, Ontario

Norda Limited
833 King Street West
Toronto Ontario
M5V 1N9

Stange Canada Limited
3340 Orlando Drive
Mississauga, Ontario
L4V 1C7

Stuart Brothers
Division of Givaudan Ltd.
3470 St Antoine Street
Montreal, Quebec

International Flavours & Fragrance
7330 Keele Street North
Concord, Ontario
L4K 1B6

Fritzche, Dodge & Olcott Canada Ltd.
81 Northline Road
Toronto 37Y, Ontario

R.W. Love Limited
39 Parliament Street
Toronto, Ontario

(Profodcil Bulletin 15(1); 1980; 45)

REGULATION

260 Agmark grade specifications of black pepper under MUG and GL grades

It has been informed by the Directorate of Marketing and Inspection vide their letter No.F.2/Black Pepper/77 dated 27th March, 1981 that two additional grades of Black Pepper viz. MUG Grade 3 and MUG Grade 4 have been included in the Schedule for Ungarbled Malabar Black Pepper and one more grade viz. GL. Grade 3 has been included under Garbled Light Black Pepper.

Given below are the different grades of Black Pepper under MUG Grade and GL Grade incorporating the additional grades notified above.

Grade designations and definitions of quality of Ungarbled Malabar Black Pepper

Grade designation	*Extraneous matter not exceeding (per cent)	Light berries@ not exceeding (per cent)	Moisture¢ content not exceeding (per cent)	General characteristics
MUG Grade 1	2.0	7.0	12.0	Shall be dried mature berries of piper nigrum grown in South India, colour varying from brown to black with a wrinkled surface. Shall be free from insects.
MUG Grade 2	2.0	10.0	12.0	
MUG Grade 3$	3.0	15.0	12.0	
MUG Grade 4$	4.0	20.0	12.0	

* These comprise dust, chaff, pickings and other foreign matter including pinheads. Tolerance for mouldy pepper upto 2 per cent.

@ Light berry contents to be tested by flotation method in alcohol or methylated spirit of specific gravity 0.80 to 0.82 at room temperature (around 25 C)

¢ During mansoon months i.e. from 15th May to the 30th September, a tolerance of 0.5 per cent is allowed in respect of moisture.

$ MUG Grade 3 and MUG Grade 4 are meant for export only.

Grade designations and definitions of quality of Garbled Light Black Pepper*

Grade designation	¢Extraneous matter not exceeding (per cent)	Pinheads not exceeding (per cent)	General Characteristics
GL Grade Special	2.0	$	Shall be dried berries of Piper nigrum grown in South India, dark brown to dark black in colour and garbled. They shall be well dried and free from mould or insects.
GL Grade 1	3.0	5.0	
GL Grade 2@	5.0	10.0	
GL Grade 3@	6.0	15.0	

* Pepper in which 50 per cent or more float when stirred in alcohol or methylated spirit of 0.80 to 0.82 specific gravity at room temperature (around 25 C).

¢ These comprise dust, chaff, pickings and other foreign matter.

$ In the case of "GL Grade Special", the extraneous matter includes pin-heads also. No separate allowance will be admissible for pin-heads.

@ GL Grade 2 and GL Grade 3 are meant for export only.

(Spices newsletter 15(5); 1981; 7)

261 Prevention of food adulteration rules

G.S.R. 205(E) - In the notification of Government of India in the Ministry of Health and Family Welfare No. GSR 23(E) dated the 16th January, 1981, published at pages 37-39 of the Gazette of India Extraordinary, Part II-Section-8 Sub-section (i) dated the 16th January, 1981 :

On page 39, in the Table

(a) insert '(1)', '(2)' and '(3)' as column numbers below the headings "Period of Validity" "Minimum percentage of sodium chloride content as NaCl (on dry basis", and Minimum percentage of matter soluble in water other than Sodium Chloride (on dry basis)" respectively;

(b) in column (2), for "NaCL" read "NaCl";

(c) in column (3), for "Minimum" read "Maximum".

(See Food Digest 1981, vol. 4, No.2, Page 83-5)

(Gazette of India (Extraordinary) Part II, Section 3, sub-section (i) 25th March 1981; 508)

262 Survey of eatables from rural areas in Uttar Pradesh

A survey of yellow to orange coloured eatables from rural areas in UP has been taken up by Industrial Toxicology Research Centre, Lucknow. Samples of eatables were collected from all the 56 districts of UP. In each district, two blocks (total 112 blocks) and from each block, two village markets (total 224 markets) were covered. Five yellow to orange coloured food samples comprising two sweets, two namkins and one turmeric (whole or powdered) were purchased from each rural village market. The Centre had a total of 1,115 samples from 223 village markets; analysis of 604 samples has been completed. Of these, 156 samples were found to be coloured with synthetic dyes; 116(74.4%) had non-permitted colours and 40(25.6%) permitted colours. Metanil yellow was among the most frequently used non-permitted colours having been used in over 45% samples.

The results obtained so far indicate that over 75% of the yellow coloured food samples from rural UP are adulterated with non-permitted colour Metanil yellow followed closely by Orange-II. A detailed report will be submitted to UP government in due course.

(Technology Awareness Service 6(2); 1980; 38)

263 Prevention of food adulteration (amendment) rules, 1980

G.S.R. 337 - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Govt. proposes to make in exercise of the powers conferred by sub-section (1) of the Section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (1) of section 23, of the said Act for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft rules will be taken into consideration on or after expiry of a period of 90 days from the date of publication of this notification in the offical Gazette.

Any objections or suggestions which may be received from any person with respect to the said rules before the expiry of the aforesaid period, will be considered by the Central Govt.

Objections or suggestions, if any, may be sent to Shri G. Panchapakesan, Under Secretary, Ministry of Health & Family Welfare.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1980.

2. They shall come in force on the date of their final publications in the official Gazette.

3. In the Prevention of Food Adulteration, Rules, 1955 in Appendix 'B'.

for item A, 18.06, the following shall be substituted namely; "A.18.06 - Food grains meant for human consumption shall be whole or broken kernels of cereals, millets and Pulses.

A.18.06.01- Wheat :

Description - Wheat shall be dried mature grains of triticum vulgare/durum. It shall be sweet, clean and wholesome. It shall conform to the following specifications :

1. Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised grains at 130-133 C for 2 hours).

2. Foreign Matter - Not more than 4.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent. Provided further that the limit for Dhatura and akra (vicia Species) shall not exceed 0.025 & 0.2 per cent by wt. respectively.

3. Other edible grains - Not more than 6.0 per cent by wt.

4. Damaged grains - Not more than 6.0 per cent by wt. provided that Karnal bunt affected grain and ergot affected grain shall not exceed 0.5 and 0.05 per cent by wt. respectively.

5. Weevilled grains - Not more than 4.0 per cent by wt.

6. Uric acid - Not more than 100 mg per kg.

7. Rodent hair and excreta - Not more than 5 pieces per kg.

8. Aflatoxin - Not more than 30 microgram/kg.

Provided that the total of foreign matter, other edible grains, damaged grains and weevilled grains shall not exceed 15.0 per cent by wt.

The pesticide residue shall not exceed the limits prescribed under rule 65.

A.18.06.02 - Maize :

Maize shall be dry and mature grains of zea mays. It shall be sweet, hard, clean and wholesome. It shall conform to the following specifications :

(i) Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised grains at 130-133 C for two hours).

(ii) Foreign Matters - Not more than 4.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent and poisonous seeds shall not exceed 0.5 per cent provided further that the Dhatura and akara (vicia species) shall not exceed 0.025 and 0.2 per cent by weight respectively. It shall be free from kesari seeds.

(iii) Other edible grains - Not more than 6.0 per cent by weight.

(iv) Damaged grains - Note more than 4.0 per cent by wt. provided that Karnal bunt affected grain and ergot affected grain shall not exceed 0.5 and 0.05 per cent by wt. respectively.

(v) Weevilled grains - Not more than 5.0 per cent by wt.

(vi) Uric acid - Not more than 100 mg per kg.

(vii) Rodent hair and excetra - Not more than 5 pieces per kg

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided further that the total of foreign matter, other edible grains, damaged grains and weevilled grains shall not exceed 15.0 per cent by wt. The pesticide residue shall not exceed the limits prescribed under rule 65.

A.18.06.03 - Jowar and Bajra :

Jowar and Bajra shall be dried mature grains of Sorghum vulgare and Pennisetumm-typhioides respectively. These shall be sweet, hard, clean and wholesome. These shall conform to the following specifications :

(i) Moisture - Note more than 14.0 per cent (obtained by heating the pulverised grains at 130-133 C for two hours).

(ii) Foreign matter - Not more than 4.0 per cent by wt. provided that inorganic matter and poisonous seeds shall not exceed 1.0 and 0.5 per cent respectively provided that the Dhature and akra (Vicia species) shall not exceed 0.25, 0.2 per cent respectively. These shall be free from Kesari seeds.

(iii) Other edible grains - Not more than 5.0 per cent by wt.

(iv) Damaged grains - Not more than 4.0 per cent by wt. provided the ergot affected grains shall not exceed 0.05 per cent by wt.

(v) Weevilled grains - Not more than 5.0 per cent by wt.

(vi) Uric acid - Not more than 100 mg/kg.

(viii) Rodent hair and excreta - Not more than 5 pieces/kg.

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided further that the total of foreign matter, other edible grains, damaged grains and weevilled grains shall not exceed 15.0 per cent by wt. The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.6.04 - Masoore whole :

Masoore whole shall consist of the lentil (lens esculenta). It shall be sound, dry, sweet, clean and wholesome. It shall be free from Kesari-gram. It shall conform to the following specifications:

(i) Moisture - Not more than 14.0 per cent by weight (obtained by heating the pulverised pulses at 130-133 C for two hours).

(ii) Foreign matter - Not more than 4.0 per cent by wt. Provided that inorganic matter shall not exceed 1.0 per cent.

(iii) Other edible grains - Not more than 3.0 per cent by wt.

(iv) Damaged grains - Not more than 5.0 per cent by wt.

(v) Weevilled grains - Not more than 6.0 per cent by wt.

(vi) Uric Acid - Not more than 100 mg/kg.

(vii) Rodent hair and excreta - Not more than 2 piece per kg.

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided that the total foreign matter, other edible grains, damaged grains and weevilled grains not exceed 14.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.06.05 - Urd whole :

Urd whole shall consist of seeds of the pulses (Phaseolus mungo). It shall be sound, dry, sweet and wholesome. It shall be free from Kesari grains. It shall also conform to the following specifications :

(i) Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulses at 130-133 C for two hours).

(ii) Foreign matter - Not more than 4.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent by wt.

(iii) Other edible grains - Not more than 4.0 per cent by wt.

(iv) Weevilled grains - Not more than 5.0 per cent by wt.

(v) Damaged grains - Not more than 5.0 per cent by wt.

(vi) Uric acid content - Not more than 100 mg/kg

(vii) Rodent hair and excreta - Not more than 2 pieces per kg.

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided that the total foreign matter and other edible grains, damaged grains and weevilled grains shall not exceed 15.0 per cent by wt.

The pesticide residue shall not exceed the limits prescribed under rule 65.

A.18.06.06 - Moong whole :

Moong whole shall consist of seeds of green gram (Phaseolus aureus Roxb). It shall be sound, dry, sweet, wholesome and free from Kesari gram and admixture of deleterious substances. It shall conform to the following specifications:

(i) Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulses at 130-133 C for two hours).

(ii) Foreign Matter - Not more than 4.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent.

(iii) Other edible grains - Not more than 4.0 per cent by wt.

(iv) Weevilled grains - Not more than 6.0 per cent.

(v) Uric acid content - Not more than 100 mg/kg.

(vi) Damaged grains - Not more than 5.0 per cent by wt.

(vii) Rodent hair and excreta - Not more than 2 pieces per kg.

(viii)Aflatoxin - Not more than 30 microgram/kg.

Provided that the total of foreign matter and other edible grains, damaged grains, and weevilled grains shall not exceed 15.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.06.07 - Chana whole :

The chana whole shall be the dried grains of gram (cicer arietinum). It shall be sound, clean, sweet, wholesome and free from Kesari gram and admixture of deleterious substance. It shall conform to the following specifications:

(i) Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulses at 130-133 C for two hours).

(ii) Foreign Matter - Not more than 4.0 per cent by wt. provided that the inorganic matter shall not exceed 1.0 per cent.

(iii) Other edible grains - Not more than 4.0 per cent by weight.

(iv) Damaged grains - Not more than 5.0 per cent by wt.

(v) Weevilled grains - Not more than 6.0 per cent by wt.

(vi) Uric acid content - Not more than 100 mg/kg.

(vii) Rodent hair and excreta - Not more than 2 pieces per kg.

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided that the total of foreign matter and other edible grains damaged grains and weevilled grains shall not exceed 15.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.19.06.08 - Split pulse Arhar :

Dal Arhar shall consist of husk and split seeds of red gram (Gajanus indicus/ cajan). It shall be sound, clean, sweet, dry, wholesome and free from Kesari gram, Kesari dal and admixture of deleterious substance. It shall be also free from artificial colour. It shall conform to the following specifications.

(i) Moisture - Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulses at 130-133 C for 2 hours)

(ii) Foreign matter - Not more than 2.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent.

(iii) Other edible grains - Not more than 0.5 per cent by wt.

(iv) Damaged grains - Not more than 5.0 percent by wt.

(v) Weevilled grains - Not more than 3.0 per cent by wt.

(vi) Uric acid content - Not more than 100 mg/kg.

(vii) Rodent hair and excreta - Not more than 2 pieces per kg.

(viii) Aflatoxin - Not more than 30 microgram/kg.

Provided that the total of foreign matter and other edible grains, damaged grains and weevilled grains shall not exceed 7.0 per cent by wt.

The pesticide residue shall not exceed the limits prescribed under rule 65.

A.18.06.09 - Split pulse Moong

Dal Moong shall consist of split seeds of green gram (Phaseolus aureus Roxb.). It shall be sound, clean, sweet, wholesome, free from Kesari gram and Kesari pulse and admixture of deliterious substance.

It shall also conform to the following specifications :

(i) Moisture	Not more than 14.0 percent by wt. (obtained by heating the pulverised pulses at 130-133 C for two hours)
(ii) Foreign matter	Not more than 2.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent.
(iii) Other edible grains	Not more than 4.0 per cent by wt.
(iv) Damaged grains	Not more than 5.0 per cent by wt.
(v) Weevilled grains	Not more than 3.0 per cent by wt.
(vi) Uric acid content	Not more than 100 mg/kg.
(vii) Rodent hair and excreta	Not more than 2 pieces per kg.
(viii) Aflatoxin	Not more than 30 microgram/kg.

Provided that the total of foreign matter, other edible grains, damaged grains and weevilled grains shall not exceed 10.0 per cent by weight.

The pesticide residue shall not exceed the limit prescribed under rule, 65.

A.18.06.10 - Split Pulse Urd :

Dal urd shall consist of split seeds of pulse (phaseolus Mungo). It shall be sound, dry, sweet, wholesome, free from Kesari gram and Kesari pulse, and admixture of deleterious substance. It shall also conform to the following specifications:

(i) Moisture	Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulse at 130-133 C for two hours).
(ii) Foreign matter	Not more than 2.0 per cent by wt. provided that the inorganic matter shall not exceed 1.0 per cent.
(iii) Other edible grains	Not more than 4.0 per cent by wt.
(iv) Damaged grains	Not more than 5.0 per cent by wt.

(v)	Weevilled grains	Not more than 3.0 per cent by wt.
(vi)	Uric acid content	Not more than 100 mg/kg.
(vii)	Rodent hair and excreta	Not more than 2 pieces per kg.
(viii)	Aflatoxin	Not more than 30 microgram/kg.

Provided that the total of foreign matter, other edible grains, damaged grain and weevilled grains shall not exceed 10.0 per cent by weight.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.06.11 - Dal Chana :

Dal Chana shall consist of split grains of gram (Cicer arietinum). It shall be sound, clean, sweet, dry, wholesome free from Kesari gram and Kesari pulse and admixture of deleterious substance. It shall also be free from artificial colour. It shall conform to the following specifications:

(i)	Moisture	Not more than 15.0 per cent by wt. (obtained by heating the pulversied pulse at 130-133 C for two hours).
(ii)	Foreign matter	Not more than 2.0 per cent by weight provided that the inorganic matter shall not exceed 1.0 per cent by wt.
(iii)	Other edible grains	Not more than 2.0 per cent by wt.
(iv)	Damaged grains	Not more than 5.0 per cent by wt.
(v)	Weevilled grains	Not more than 3.0 per cent by wt.
(vi)	Uric acid	Not more than 100 mg/kg.
(vii)	Rodent hair and excreta	Not more than 2 pieces per kg.
(viii)	Aflatoxin	Not more than 30 microgram/kg.

Provided that the total of foreign matter, other edible grains, damaged grains weevilled grains shall not exceed 8.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.06.12 - Split pulse Masoore :

The dal masur consist of husk and split seed of the Lentil (Lensesculenta). It shall be sound, clean, sweet, dry, wholesome free from Kesari gram, Kesari pulse and admixture of deleterious substance. It shall also be free from artificial colour. It shall conform to the following specifications:

(i)	Moisture	Not more than 14.0 per cent by wt. (obtained by heating the pulverised pulse at 130-133 C for two hours)
(ii)	Foreign matter	Not more than 2.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent.
(iii)	Other edible grains	Not more than 2.0 per cent by wt.

(iv)	Damaged grains	Not more than 5.0 per cent by wt.
(v)	Weevilled grains	Not more than 3.0 per cent by wt.
(vi)	Uric acid content	Not more than 100 mg/kg.
(vii)	Rodent hair and excreta	Not more than 2 pieces per kg.
(viii)	Aflatoxin	Not more than 30 microgram/kg.

Provided that total of foreign matter, other edible grains, damaged grains and weevilled grains shall not exceed 8.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

A.18.06.13 - Rice :

Rice shall be mature kernels or pieces of kernels of oryza Sativa obtained from paddy as raw or parboiled. It shall be dry, sweet, clean, wholesome, free from deleterious poisonous substance and colouring agents. It shall conform to the following specifications:

(i)	Moisture	Not more than 14.0 per cent by wt. (obtained by heating the pulverised grains at 130-133 C for two hours).
(ii)	Foreign matter	Not more than 3.0 per cent by wt. provided that inorganic matter shall not exceed 1.0 per cent by wt.
(iii)	Damaged grains	Not more than 5.0 per cent by wt. (excluding discoloured tip).
(iv)	Weevilled grains	Not more than 4.0 per cent by wt.
(v)	Uric acid content	Not more than 100 mg/kg.
(vi)	Rodent hair and excreta	Not more than 2 pieces per kg.
(vii)	Aflatoxin	Not more than 30 microgram/kg.

Provided that the total of foreign matter, damaged grains and weevilled grains shall not exceed 8.0 per cent by wt.

The pesticide residue shall not exceed the limit prescribed under rule 65.

Explanation : The definitions for various refractions prescribed under this item shall be as follows:

(a) The foreign matter include organic and inorganic matter - Inorganic matter shall include the metallic pieces, gravel, dirt, pebbles stones, lumps of earth, clay and mud. The organic matter shall include husk, straws, weed seeds and other inedible grains including poisonous seeds.

Poisonous seeds shall include Dhatura (D. fasturlinn and D. Stramonium linn), Corn cockle (Agrastemma girhage, Machal Lalium temulentm linn), Akra (Vicia species) and Agromone Mexicana.

Note : Paddy in rice will be treated as organic foreign matter. Kernels or

pieces of kernels, if any, having mud sticking on the surface will be treated as inorganic foreign matter.

(b) Damaged kernels - are kernels or pieces of kernels that are sprouted or internally damaged as a result of heat, microbe, moisture or weather, viz. Ergot affected grain and kernel bunt-grains.

(c) Weevilled grains - kernels that are partially or wholly bored by insect injurious to grains excluding germ eaten grains. Egg spotted grains are not to be considered as weevilled grains.

(d) Other edible grains - Any edible grains including oilseed other than one which is under consideration.

(Gazette of India Part II, section 3, sub-section (i); 28th March 1981; 857-60)

HYGIENE

64 Is aluminium harmless?

Aluminium is considered to be a non-toxic element. It is believed to be poorly absorbed and much of it, excreted in the feces. Intake of dietary aluminum by man is estimated to vary between 18 and 25 mg per day.

Evidence is accumulating that aluminum is absorbed by the gut. Patients with renal failure taking large amounts of aluminum-cycle resins have raised serum levels of aluminum. It has been suggested that aluminum intoxication may be responsible for the dialysis encephalopathy syndrome.

Recent studies indicate that parathyroid function may be affected by aluminum. In long-term hemodialysis, there is hypocalcemia which is a stimulus for parathormone secretion. Rats treated with parathormone had increased absorption of aluminum and the hormone also had an effect on the uptake and distribution of aluminum in various tissues.

The preferential localization of aluminum in parathyroids has been observed. There was a linear relationship between dietary intake of aluminum and its concentration in the parathyroids. The intake values were far below those used for phosphate binding therapy in hemodialysis.

In a study with 24-day-old rats by Al supplementation, secondary hyperparathyroidism was produced by feeding a low calcium diet in some animals. In all aluminum-supplemented groups, parathyroid glands had high levels of aluminu The levels were highest in those with secondary hyperparathyroidism. The uptak by parathyroids was significantly higher than by the thyroid or skeletal muscle

These studies indicate that significant amounts of aluminum may be absorbed by the gut and preferentially localized by certain tissues. This in turn could lead to encephalopathy, hyperparathyroidism and possibly other yet unrecognized

disorders. Clearly, aluminum appears not to be innocuous as believed to be. (*Nutrition Reviews 38(7); 1980; 7*)

265 Asbestos in food and drink

A report by the Food Additives and Contaminants Committee recommends that, although there is no evidence of any health risk from asbestos in food, all possible steps should be taken to reduce its presence in drinking water, beverages and food to a minimum. The Committee does not , however, consider that statutory limits are necessary at the present time.

The Committee also makes a number of recommendations aimed at encouraging more research into the development of suitable alternative materials that are acceptable from the point of view of their effectiveness and safety in use. (*Food Trade Review 50(2); 1980; 90*)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

266 Energy food unit set up in Belgaum

The Belgaum unit the second plant to produce energy food has been erected and commissioned by the CFTRI engineers for the Karnataka State Agro-Corporation Products Ltd., Bangalore. The Mysore unit was commissioned during 1979-80 and produced about 1,700 tonnes of energy food during 1980-81.

During a short period of production the Belgaum unit produced about 550 tonnes of energy food. The total energy food produced during the year was 2,250 tonnes valued at Rs. 12 million.

The product is being distributed to various schools by the Department of Education. Both the units can together produce 4,800 tonnes of food per annum operating on a two shift basis.

The report from the schools where the energy food is being distributed confirms its acceptability. The erection of units at Chitradurga and Raichur is complete and these units will go into production shortly.
(*The Hindu 9th May 1981; p 12*)

267 Single cell protein

Single cell protein (SCP) will be manufactured in India for the first time for human consumption. The project will be set up in a backward area of Maharashtra by the State Industrial & Investment Corporation of Maharashtra (SICOM).

SCP will be a packaged food either in the form of bar or a tablet with 60 to 65 per cent of protein content.

About 35,000 tonnes of molasses per year would be required for the production of SCP. The estimated cost of the project is Rs.1 crore.
(*Industrial Development News* 15(4); 1980; 35)

268 Soya bean oil

Four soya bean processing plants will be set up in Madhya Pradesh at an estimated cost of Rs. 24 crores for the production of oil and Vanaspati.

The plants will be in the cooperative sector. The National Dairy Development Corporation is expected to finance to the tune of Rs. 3 crores. Madhya Pradesh leads in soya bean cultivation in the country.
(*Industrial Developments News* 14(9); 1979; 84)

269 New extrusion facility in India

UNICEF has supplied a complete extrusion cooking unit, Wenger X-175 Model, to the Government of India for installation at ready-to-eat food factory at Hyderabad.

The ingredients included a mixture of flours of cereals (wheat, rice corn, jowar, ragi) and oil seeds (groundnut, defatted soy, full-fat soy). The formula is so designed that the final product contains 350 calories and 14-16 grams protein per 100 grams product. The extrudates after drying and cooling are coated with a trace of oil (salad oil) for application of minerals, spices and vitamins.

The production capacity of the unit is 20 MT per day. The products are packed in bulk in 5-ply paper bags having polyliner or polylined jute bags. Polyliner is heat sealed and the bag stitched. Each bag contains 10 kg of extrudates based on density.
(*PFNDAI newsletter No. 8, Feb. 1981; p 1*)

270 Pesticides

Cyanamid India Limited is planning to put a multi-purpose plant at Bulsar in Gujarat at a total investment of Rs. 2 crores.

The company intends to manufacture organo phosphorous pesticides such as thymete phorate, fenitrothion, abate and malathion. In the case of malathion it would be an expansion of its existing production capacity of 1,400 tonnes per year.

Thymete phorate is a systemic insecticide. The company has a plan to produce 450 tonnes per year of thymete phorate, 200 tonnes of fenitrothion and 25 tonnes of abate.
(*Industrial Development News* 15(5); 1980; 44)

271 Science Advisory Committee to the Cabinet (SACC)

The Government of India has recently constituted a Science Advisory Committee to the Cabinet (SACC). The committee will advise the government on the formulation of science and technology policy and the manner of its implementation. It will also recommend measures for increasing the country's technological self-reliance, with particular reference to the government's policy of foreign collaboration and import of technology, policy issues relating to the development and application of science and technology and organizational aspects of science and technology institutions.

With Dr. M.S. Swaminathan, Member Planning Commission, as its Chairman, SACC will have the following other members Prof. M.G.K. Menon, Secretary, Department of Science and Technology, Dr. H.N. Sethna, Chairman, Atomic Energy Commission, Prof. Satish Dhawan, Secretary, Department of Space, Secretary, Department of Electronics, Scientific Adviser to the Defence Minister, Secretary, Department of Environment, Dr. Raja Ramanna, Secretary, Department of Atomic Energy and Director, Bhabha Atomic Research Centre, Bombay, Prof. Rais Ahmed, Physics Department, Aligarh Muslim University, Prof. Devendra Lal, Director, Physical Research Laboratory, Ahmedabad, Prof. C.N.R. Rao, Indian Institute of Science Bangalore, Dr. M.M. Sharma, University Department of Chemical Technology, Bombay, Shri K.P.P. Nambiar, Chairman and Managing Director, KELTRON, Trivandrum, Dr. M.N. Dastur, Chairman-cum-Managing Director, Dastur & Co (Pvt) Ltd., Calcutta, Prof. Obaid Siddiqui and Prof. R.R. Daniel, Tata Institute of Fundamental Research, Bombay, Dr. Nitya Nand, Central Drug Research Institute, Lucknow, Dr. S.R. Valluri, National Aeronautical Laboratory, Bangalore, and Dr. S.Z. Qasim, National Institute of Oceanography, Goa. The tenure of the present committee is up to 31st March, 1983.

(Journal of Scientific and Industrial Research 40(5); 1981; 353-4)

PERSONALIA

NIL

I N D E X

Additive, food
  bread softner 191
  dough strengthener 191
  emulsifier 187
  peanut butter flavour 188, 189
  peanut butter stabilizer 190
Adulteration
  food grain 263
  survey, food items 262
Agricultural waste *for making* grain storage bin 184
Aluminium in food *extent of* health hazard 264
Apple export 252
Arecanut cutter 202
Arhar *see* pigeon pea
Asbestos
  Food safety measures 265

Bajra
  production 238
  quality control 263
Barley, production 238
Bengal gram
  production 238
  quality control 263
Biogas production *use of*
  bamboo-bed digester 198
Biscuit, production 245
Blackgram, quality control 263
Blancher *for* vegetable 201
Bread softener 191
Brewery, anti-corrosion floor polish 207
Brick/mud silo *for* grain storage 183

Calibrator *to measure* liquid flow systems 237
Cardamom, production 239
Castor seed, production 239
Channa *see* Bengal gram
Chappati baking *use of* solar cooker 211
Chillies, dry
  production 239
Coconut waste *as* fuel 195
Cold tea - a new bottled cool drink 199
Cooking pan *from* teflon-coated aluminium 212
Coriander, production 239
Cottonseed
  export legislation 255
  production 239

Cystine
  production process 193

Dehydrated drying process *for* fish 194
Dehydrator, food
  solar-powered 217
Digester *for* biogas production *from* bamboo 198
Dough strengthener 191
Drum dryer *for* liquid food 216
Dryer
  solar-powered 217
  by microwave 219
  by vacuum 220
  for fish 218
  for liquid food 216

Egg, export 251
Emulsifier *to reduce* fat content *in* food 187
Energy food unit 266
Essential oil, importers 259
Export
  apple 252
  egg 251
  mushroom 253
  rice-basmati 249
  rice bran oil 250
  tamarind 251
Export legislation, cottonseed 255
Extrusion cooking unit 269

Fermentation *use of* foam level controller 208
Fermentor
  pilot 205
  bench-top 206
Finger millet *see* Ragi
Fish
  dehydrated drying process 194
  dryer *for* rural areas 218
  insulated packaging box 224
  production 242
Flavour
  peanut butter 188, 189
Foam level controller *in* fermentation process 208
Food grain
  production 238
  quality control 263
Food safety
  aluminium 264
  asbestos 265

Fruit powder, dried
importers 257

Glass/plastic bottle for toxic liquids 229
Grading machine, potato 203
Grain, production 238
Grain storage bin
from paddy straw/mud 182
from brick/mud 183
from soil/agricultural waste 184
Grape waste as fuel 196
Green gram, quality control 263
Groundnut, production 238
Guar seed, production 239

Heat recovery unit for food refrigeration 221

Importers
essential oil 259
fruit powder-dried 257
mushroom - dried 256
tamarind 258
Industries, newly established
energy food unit 266
extrusion cooking unit 269
pesticide plant 270
single cell protein unit 267
soybean oil plant 268
Insulated box for fish packaging 224

Jowar see sorghum

Lactose-free packaging of milk 223
Laminate packaging machine 228
Legume
production 238
quality control 263
Lentil, quality control 263
Linseed, production 239

Maize
production 238
quality control 263
Masoore dhal see Lentil
Meat, storage
low-cost method 185
Mercury analyser, food 230
Microbe, new variety
patenting 181

Microwave
dryer 219, 220
moisture analyser 235
Milk
Lactose-free packaging 223
production 241
Milk powder, production 243
Millets, production 238
Moisture analyser, food 233-5
Molecular sieves from paddy husk 197

Moong dhal see Greengram
Mushroom
export 253
importers 256

Nigerseed, production 239

Oilseeds, production 239

Packaging
fish 224
milk 223
potato-sliced 222
toxic liquids 229
Packaging machine
for laminate packaging 228
for polythelene bag sealing 225
for thermoplastic bag making 227
Paddy
harvester 200
husk for molecular sieves 197
straw/mud bin for grain storage 182

Peanut see also groundnut
Peanut butter flavour 188-9
Peanut butter stabilizer 190
Pepper, black
production 239-40
regulation 260
Pesticide plant newly established 270

Pigeon pea
production 238
quality control 263
Polythene bag sealer 225
Potato, sliced
vacuum packaging 222
Potato grading machine 203
Poultry skinning machine 204
Production
biscuit 245
fish 242
foodgrains 238

Production (contd.)
legumes 238
milk 241
milk powder 241
oilseeds 239
pepper 239-40
spices 239
sugarcane 239
tamarind 248
tinplate 246
vanaspati 244
vanillin 247
Production process
cystine 193
tartaric acid 192
Pulse *see* legume

Quality control
food grains 263
yellow coloured food 262

Ragi, production 238
Rape/mustard seed, production 239
Refrigerator
heat recovery unit 221
low-cost mud pot 186
solar-powered unit 214-5
Regulation
black pepper 260
sodium chloride 261
Rice
export 249
production 238
quality control 263
Rice bran oil, export 250

Safety glass bottles *for* toxic liquids 229
Safflower seed, production 239
Science Advisory Committee, Government of India 271
Sesamum, production 239
Shital pot *for* vegetable storage 186
Single cell protein unit 267
Skinning machine
poultry 204
Sodium chloride, regulation 261
Solar cooker
basket type 213
chinese model 209
flat plate type 210
three-in-one 211
Solar dehydrator *for* food 217
Solar refrigerator *for* food 214
Sorghum
production 238
quality control 263
Soybean oil plant 268
Spectrophotometer, ultraviolet 232
Stabilizer
peanut butter 190
Sterility list unit 236
Storage, meat
low-cost method 185
Storage bin *for* grain
from paddy straw/mud 182
from brick/mud 183
from soil/agricultural waste 184
low cost 184
Sugar cane, production 239
Survey, food adulteration, in UP 262

Tamarind
export 254
importers 258
production 248
Tartaric acid
production process 192
Tea, bottled cool drink 199
Temperature indicating viscometer 231
Thermoplastic bag-making machine 227
Tinplate, production 246
Tur dhal *see* pigeon pea

Urd *see* blackgram

Vacuum
dryer, food 220
packaging, potato 222
Vanaspati, production 244
Vanillin, production 247
Vegetable blancher 201
Vegetable glue powder 226
Vegetable preservation, Shital pot 186

Waste utilization
agriculture *for* grain storage bin 184
coconut *as* fuel 195
grape *as* fuel 196
Wheat
production 238
quality control 263

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Contents

1. RAW MATERIALS ... 143
2. STORAGE AND INFESTATION CONTROL ... 145
3. FOOD ADDITIVES ... 145
4. PROCESSES ... 149
5. BYPRODUCTS AND WASTE UTILIZATION ... 150
6. PROCESSED PRODUCTS ... 152
7. EQUIPMENT AND MACHINERY ... 162
8. PACKAGING ... 164
9. ANALYSIS ... 168
10. COMMERCIAL INTELLIGENCE ... 176
11. FOOD REGULATION, QUALITY CONTROL AND HYGIENE ... 185
12. TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES ... 187
13. PERSONALIA ...

RAW MATERIALS

Nil

STORAGE AND INFESTATION CONTROL

272 Solar refrigeration system

An intermittant solar refrigeration system has been developed at the Indian Institute of Technology (IIT), Delhi for achieving refrigeration during early hours of the day. Suitable for tropical climates, the system does not need any electricity and is fit enough to be used even in the remotest part of the country. The system is capable of attaining temperatures as low as minus 15 C with ordinary flat plate solar energy collectors.

(Economic and Commercial News 11(5); 1981; 10)

273 Temperature control extends pear season

A temperature and environment control system, developed by Eurotherm Ltd, Faraday Close, Durrington, Worthing, is being used to extend the storage life of pears by two months or more. The plant, which contains eight stores each with a capacity of 150 tonnes is designed to chill the fruit rapidly and then hold a temperature just above the freezing point of the fruit (zero to -1 C). At the same time, the oxygen level in the store is reduced to 2 per cent. These conditions keep the pears alive but prevent premature ripening until the store is due to be opened.

(Food Trade Review 50(8); 1980; 424)

274 Safety of food irradiation process

No toxicological hazard is caused by irradiating, for conservation, any food up to a dose of 10 kilogray (1 Megarad), and hence foods treated in this way no longer need to be tested for toxicity. At present, for approximately 95 per cent of food items to be treated by irradiation, the dose needed is much lower than 10 kilogray. This clearance was given by a Joint Expert Committee on the Wholesomeness of Irradiated Food (JEFCI), which is supported by the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the International Atomic Energy Agency

(IAEA). The JEFCI, founded in 1961, recommended already in 1976 strawberries, papaya and chicken, and provisional acceptance of irradiated rice, onions and cod-redfish mixture treated at levels of irradiation below 10 kilogray. Based on its recommendations, 22 countries, among them Bulgaria, Canada, France, Hungary, the Netherlands and the USSR, have already given clearance for unconditional or provisional irradiation conservation for foods such as deep-frozen meals in hospitals, cod and haddock fillets, chicken, spices, strawberries, mushrooms, onions and potatoes.

(Protein Foods and Nutrition Development Association of India newsletter No. 12; March 1981; p 1)

275 Insect detector

How long can a beetle hold its breath? Not long enough to escape detection by a new method developed at the U.S. Department of Agriculture Research and Development Laboratory. Researchers there have come up with a way to detect the carbon dioxide exhaled by insect pests hidden in stored food and grain. The system is sensitive enough to detect a single insect in a kilogram sample of grain, even in the presence of normal atmospheric CO_2. The method has been successfully used on wheat, flour, corn meal, candy bars, dried fruit, even food mixes. And in contrast to some other detection methods. It does not leave residues or by-products that could affect food quality.

(The Hindu August 19, 1981; 18)

276 New system for mouse control

Called the Check System, the device, developed by Sorex Ltd of Trading Estate, St. Michaels Road, Widnes, Cheshire WA8 8TJ. consists of an outer sleeve into each end of which is inserted a cartridge containing an absorbent wick soaked in liquid broadifacoum rodenticide. The device relies upon the exploratory and grooming habits of mice and its design is the result of close observation of their behaviour patterns. When mice encounter the tube they readily run through it and in doing so brush against the wick. They are thus contaminated with the poison which they subsequently ingest during grooming.

(Food Trade Review 50(10); 1980; 548)

FOOD ADDITIVES

277 Silcron silica for use in food

The Glidden Pigments Division of the American Company SCM International Ltd has brought out their fine particle silica for the food industry. This material, named Silcron, is obtainable in the UK from Alpha Chemical Co of 5th Floor Unicentre, Lords Walk, Preston, Lancs PRI IDH. Three grades of the material are available and all of them comply with FDA Regulations in the States. This amorphous material can be used as an anticaking agent or to protect stored products against moisture. It will also act as a powder dispersant in water and it converts liquid ingredients into easily handled powders. It will function as a grinding aid and also reduce turbidity in beer by absorbing protein-tanning compounds with little alteration to other physical properties of the liquor.
(Food Trade Review 51(1); 1981; 25)

278 Experts find no link between hyperactivity and diet

There is no evidence of a direct casual connection between artificial food colours, flavours and hyperactivity in children, according to a report issued by the National Advisory Committee on Hyperkinesis and Food Additives. The findings also generally refute a controversial hypothesis that chemical additives and even certain natural components of common foods cause hyperkinesis in children, a condition that includes hyperactivity plus other symptoms such as short attention span, lack of concentration, impulsiveness, apathy and rebelliousness. The report concludes that studies -- carried out by dozens of investigators over some five years at a cost exceeding one million dollars -- "provide sufficient evidence to refute the claim that artificial food colourings, artificial flavourings and natural salicylates produce hyperactivity".
(Food Production Management 103(6); 1980; 26)

PROCESSES

279 New food-freezing method

A new food-freezing method keeps solids soft and liquids pou[r] temperatures as low as -5 F, according to the developer, Rich Produ[cts]

Corp. Food processed in this manner needs no thawing before use, can be stored at higher-than-usual temperatures. Key to the route in a class of sugars (including fructose and fructose/dextrose combinations) that act as humectants when used inconjuction with salts, proteins and unsaturated vegetable oils contained in foods. When processed via Rich's technique (for which over 30 patents have been applied for), free water in the food is bound to the sugars, salts, proteins and oils. The result is that there is no phase change of the water through temperatures ranging from room temperature to below freezing. Because the water in the food is bound, the evaporation rate is slowed, curtailing the rate of staling, and there is no medium for bacterial growth.
(*Chemical Engineering* 87(14); 1980; 69)

280 Process for water treatment

The first full-scale water-treatment plant using the Sirofloc purification process developed in Australia is now supplying water to Perth, capital of Western Australia.

Sirofloc uses magnetic forces to remove impurities from groundwater faster and more efficiently than conventional plants. The Rs. 1.5 crore plant, opened in March has a daily production capacity of 35 million litres. The process developed by CSIRO, Australia could save the cost significantly because it is faster and uses a smaller plant than conventional processes.

With the Sirofloc process, impurities in water are attracted by electrostatic forces on to small particles of specially treated magnetite. The particles are than magnetised and aggregate into large clumps which can be separated easily from the water. The magnetite can be cleaned and repeatedly re-used.

A spokesman for Australian Technology Engineering and Processes, the Melbourne-based group which designed and built the plant, said Sirofloc overcame the traditional problem of sludge disposal and did not need large sedimentation tanks or sand filters.

The full-scale plant would enable engineers to determine more precisely how much cheaper Sirofloc was than conventional water plants.
(*The Hindu* July 22, 1981; 23)

281 New process aids tomato peeling

Current commercial methods for peeling tomatoes are effective for peel removal but, at the same time, tend to loosen some of the underlying tomato tissue itself. This tissue becomes part of the processing waste and is unfit for consumption. These methods involve dipping tomatoes into a lye solution (sodium hydroxide) or steam treating.

A new tomato peeling process reduces the amount of edible tomato removed along with inedible peels to about 5% for the easier-to-peel varieties. Current loss is about 15-25% of the original tomato weight.

The new process, developed by William G. Schultz (USDA, Western Regional Research Center, Albany, CA) and co-workers Harry J. Neumann, John E. Schade, and James P. Morgan, involves dipping tomatoes in a fatty acid and water solution for up to 3 minutes at approximately 150 F(65 C). The fatty acid loosens peels so that they can be gently rubbed off by a flat-bed of rotating rubber discs in about 15 seconds. (The discs were previously developed USDA-WRRC).

This new process can only be used for specific, easy-to-peel varieties and depends on fruit maturity. "Where the process can be used, it will result not only in reduced waste but also in the elimination of lye-an item that adds to production costs. Reduced waste also means less effluent to dispose of -- another cost-saving feature", notes Schultz.

Part of the reduced loss in this process is due to the fatty-acid and the pectin enzymes acting on the underlying (subcutinized) layers of the peel. Low temperatures used do not loosen as much tomato under the peel as conventional methods.

Studies were done primarily with octanoic acid because it is safe, one of the most effective, has less odor than some others, and is available commercially at a reasonable price.

(Food Production Management 103(4); 1980; 22)

282 Reverse osmosis and ultra filtration purification system

Permionics has introduced its Perma system for the first time in India. Based on the Reverse Osmosis (R.O.) and Ultra Filtration (U.F.) processes, the Perma system employs a cellulose acetate membrane to separate the salts/organic matter at pressure and ambient temperature. It desalts up to 95 per cent of the dissolved solids in brakish waters, rejects anions and cations with minimal effluents, concentrates antibiotics,

skimmed milk, cheese whey, sugars, enzymes, fruit juices, etc. purifies waste water and effluents and removes bacterial and organic matter. The Perma system can provide a big fillip to the rural filtered water programmes whenever purification at low operating costs is needed. Some other areas where the Perma system finds ideal uses are: potable water for hospitals, co-operative societies, hotels, labs, etc., feed water for boilers, air-conditioning systems, cooling towers, ion exchange plants, soft drinks, electronics, etc. high purity pyrogen/bacteria - free water for pharmaceutical, photographic and food industries.

Compact in construction and economical in use, the Perma system eliminates the need for costly evaporation systems. Easily replaceable membranes are freely available. The system runs continuously without needing regeneration or conventional evaporation systems.

A unit has already been installed in Synbiotics, Baroda to concentrate streptomycin.

(Financial Express September 20, 1981; 8)

Vacuum cooling

Vacuum cooling units are particularly suitable for the very rapid cooling of large quantities of vegetables. The principle of vacuum cooling is to lower the evaporation temperature by reducing the pressure. A large quantity of water vapour is formed during this process, which is rapidly removed by causing it to condense on a cold surface (water vapour condensor).

The water vapour is formed from the water adhering to the produce and only to a very small extent from the produce. In these units a number of vacuum pumps serve to lower the pressure and a cooling unit provides the necessary cold surface.

A Dutch manufacturer (Van Kempen B.V., Industrieterrien-West, Papesteeg 94a, 4001 WE Tiel, Netherlands) makes mobile and stationary units,

(Financial Express September 20, 1981; 8)

Rice bran stabilization

The Western Regional Research Laboratory in Albany, California, is investigating the stabilization of rice bran using a Low-cost Extrusion Cooker (LEC). A pilot plant was installed which consists of an LEC, a holding chamber, cooler and conveyors.

The objective of the study is to determine the optimum relationship between extrusion conditions and holding times which will produce a stable bran chip having integrity.

The optimum conditions for the extruder and holding chamber have been identified by extruding samples according to a planned experiment and measuring free fatty acid formation, moisture, peroxidase, and oil extraction efficiency. A production run at the optimum condition for the raw bran will be made and extracted in a large production solvent extractor. A feeding study will also be conducted on the raw bran, extruded bran and extruded-extracted bran.

(LEC Newsletter 5(2); 1981; 5)

BYPRODUCTS AND WASTE UTILIZATION

285 Energy from tomato waste

Tomato cannery wastes and wood residues are producing power in two University of California demonstration projects. At the T.H. Richards Processing Company Cannery, Sacramento, Ca. a 21-foot-long mobile tank, nine feet in diameter, was fueled with tomato peels, stems and seeds which are mixed with a little water and digested by bacteria. The result is methane which can be burned to produce electrical power. Some of the methane heat is recycled to maintain desired operating temperature in the digestion tank.

(Food Production Management 103(6); 1980; 25)

286 New process for fish meal

A wet-rendering process using a 'special powder' which is claimed to improve the protein content in fish meal up to 67 per cent has been developed. Present conventional processes can yield a maximum protein content of 50 per cent which makes it substandard for export. The new process which uses a special powder derived from nature can be used as in dry-rendering. In the wet-rendering method, the quality of oil was found better.

In this process, the fish was cleaned in water and then dried on nets. After a day the contents are mixed with a special powder in water and vapourised in a cooking plant. The steam process takes less than 15 minutes. Matter is then taken out and pressed in a high screw press under

pressure ranging from 200 to 500 lbs. per sq. inch. The liquid is used for extracting the fish solubles while the solids go to the rotary drier where they are dried at 120 C and placed in the 'disintegrator' for grinding.

From the fish solubles, riboflavin, niacin, pantothenic acid, choline and B12 are derived. Fish oil is yet another useful by-product. The undesirable 'fish colour' is eliminated to a great extent.

To make good enriched fish-meal, it is essential to use only fresh material in a boiler and to clean the drying trays everyday. Drying fish meal thoroughly and storing it in a dry place where it is not exposed to air longer than necessary brings out better results.
(Industrial Know-How 4(7); 1981; 5)

287 Protein from trash fish

The Gujarat Fisheries and Aquatic Sciences Research Institue (GFASRI) has developed an edible high protein concentrate from trash fish which could be used as a useful food supplement. Trash fish is generally thrown overboard by fishermen or dried and converted into fish manure or fish meal, though their nutrient constituents may be more than those of quality fish. The easily digestible concentrate, from which most of the fish odour has been removed, can be incorporated in papad, sev, bhaji mix and idli mix. The institute has also developed sugar-coated tablets from the fish powder which is now being supplied to industrial labour in the city through the Baroda Productivity Council.
(The Hindustan Times October 16, 1981; 3)

PROCESSED PRODUCTS

288 Soy-oats infant formula

A low-cost powdered infant formula has been developed from soybeans, oats and sucrose, fortified with methionine, vitamins and minerals, and cooked with a Brady extruder. The resulting product is of good microbiological quality and disperses readily in water to give a milk-like suspension of satisfactory stability of settling. The essential amino acid pattern of the formula, its PER and NPU values, nitrogen balance data with infants, proximal chemical analysis, calorie distribution and low level of trypsin inhibitor indicate it to be adequate for feeding infants 3 months

or older. Clinical trials with infants also showed that the formula was well accepted and tolerated, and produced adequate weight gain. Retail prices of the product, packed in cans and polyethylene bags, are appreciably lower than those of comparable cow's milk and other soyabased infant formulas available in the market. The product is currently being manufactured and sold in several parts of Mexico.
(LEC Newsletter 5(2); 1981; 1)

289 Carrot-Passion fruit juice

U.S. Dept. of Agriculture researchers have developed a carrot-passion fruit juice beverage. The delicious and nutritious drink is made from unmarketable carrots. Carrot and passion fruit juices are compatible in flavour, making this new beverage a distinct product.

Four beverages, prepared using different amounts of carrot juice, passion fruit juice, sugar, and water were analyzed for composition and flavour. The carrot juice was extracted from two different varieties of carrots, Danvers and Imperator. Passion fruit juice was obtained from a commercial source. The ingredients in the beverages were then heated and processed. Canned plain carrot juice served as a control sample.

A nutritional analysis revealed that there was more *bèta*-carotene in beverages made from Danvers variety than from Imperator. Beverages prepared from Imperator contained more ascorbic acid, niacin, and thiamine and had a higher caloric value than beverages made from Danvers.

Beverages made from either Imperator or Danvers, containing 60% carrot juice, 15% passion fruit juice, 7% sugar and 18% water scored 6.4 on a 9 point Hedonic scale. The nine member taste panel gave plain carrot juice a score of 3.
(Food Production Management 103(3); 1980; 14)

290 Powdered liquor

The latest in new developments comes from Japan where President and Chief inventor of Sato Food Industry Co. Jinichi Sato says he has invented a way to dehydrate liquor while retaining taste and potency. He uses dextrin as a binding agent and plans to produce whisky, brandy and sake. Travellers may soon be served powdered liquor.
(Food in Canada 41(4); 1981; 102)

291 Spray coating for abattoirs

Waterproof glassfibre-reinforced polyster (grp) coatings with Class I fire retardation can now be applied by spray guns to the walls of abattoirs and food processing plants by Stevens Fibre Glass Ltd.

In its formulations the company uses BIP "Beetle" polyester resins made by the Chemicals Division of British Industrial Plastics (Turner & Newall) Ltd.

About 2000 m^2 of walls were coated with white GRP. First, a base coat of resin is sprayed onto the wall. This adheres so firmly that an almost indestructible bond is formed between the coating and the blockwork. When the base coat has cured a layer of resin reinforced with 25-38 mm particles of glassfibre - 1 part glass to 3 parts resin - is sprayed on and consolidated by the use of metal paddle rollers, to remove air bubbles. This is followed by a layer of resin-impregnated glassfibre mat.

Finally, a Class I gel coat resin is applied using lambswool rollers, to form a smooth and glossy top skin. Total thickness of the grp is 3 mm. *(Food Processing Industry 49(585); 1980; 41)*

292 Groundnut decorticator

The frame is made of welded M.S. angles. The cast iron hexagonal cylinder is machined and balanced before assembly and is fitted with smooth rubber pads. This reduces the breakage of seeds to bare minimum. After attaining the required speed of about 150 rpm, the cylinder gains momentum requiring only a lesser operational power.

Shelling Chamber : This is a sheet metal case with a provision to hold a sieve that helps breaking of the shell. The shelled nuts fall on the gutter below and slides down to the recepticle or a basket. There is a built-in breezer to blow away the broken shells and lust, and to clean the seeds.

Manual Operation : A set of hobbed gear and pinion is provided with a cranking motion on the gear connected to a pedal through a level. When the pedal is pushed down it contrives to revolve the gear and gradually gives the pinion on the cylinder shaft to attain the required speed.

Power Driven : The machine can be driven by a 0.5 HP electric motor or a gas engine. In this type there is no gear and pinion but the cylinder

shaft is directly driven by the prime mover.

Sieves : Two steel sieves are supplied along with the machine with different sizes of slots. Additional sieves of different sizes of slots can be supplied on specific orders.

Cap.: 3 bags per hour approx.

(*Sendoc bulletin 8(12); 1980; 16*)

293 Areca peeler

Jnana Prabodhini's Kotibhaskar Smriti Udyog has developed an areca peeler with sieving arrangement. Areca is fed from the top hopper, which is guided between a rubberised roller and an external drum. Peeled nut along with the outer husk comes out of the drum through the outlet. It is then fed to a reciprocating sieve for separation of the two. Input, output and the position of the blade are adjustable. The machine is driven by a 1-HP; 1,440-rpm motor which also drives the sieve arrangement and the blower.

(*Protein Foods and Nutrition Development Association of India newsletter No. 14; April 1981; 2*)

294 Low technology soybean dehuller

The University of Illinois has developed and patented a low technology soybean dehuller. The dehuller consists of a drum-type cracking unit followed by a simple aspiration in which the hulls are removed from the bean meat in a vertical tube air separator/classifier. Throughputs for this unit are approximately 159 kg/hr. To separate all of the hulls from the beans, two passes are required through the dehuller. The dehulling unit shows promise for small manufacturers of soyfood products.

(*LEC Newsletter 5(2); 1981; 1*)

295 Cleaner/disinfecting agent for dairies

Fragrance (Madras) offers a multipurpose cleaner cum disinfecting agent for dairies, Called Dairy Cidal it cleans and disinfects dairy equipment in one operation while simultaneously controlling milk stone build up on all milking equipment and utensils. When used as directed, Dairy Cidal is effective as a sanitizer against *Staphyloccous aureus* and *Escherichia coli*. No notable water rinse is required as it has been cleared for that purpose by the US FDA.

(*PFNDAI newsletter No. 5; Feb. 1981; p 2*)

296 Versatile cutting and mixing machine

The Combicut TC is designed for cutting mixing and blending under vacuum. The basic machine consists of the cutting and mixing section mounted in a hot-galvanized steel frame, and equipped with cutting shaft and mixing baffle drive, inlet and outlet slide, hydraulic equipment, electrical instruments and connection. Accessories include loading unit with loading scales, vacuum unit, steam relief valves, electronic thermometer, punch card control and others. The Combicut TC is available in 300 and 600 litre units with 55/75 and 88/125 hp motor output respectively.
(Processed Prepared Food 150(1); 1981; 94)

297 Dry/wet granular and pulveriser

Pharma Electro Equipments have designed a multipurpose mill for granulation and pulverization in pharmaceutical, dye, pigment, detergent, and food-processing industries. It incorporates variable force swing hammers having both knife and blunt edges rotating within carefully selected screens. Output would be up to 250 kg/hour for wet granulation and 50/60 kg/hour for pulverization. The machine processes heat-sensitive material without reducing its efficacy. The entire portable unit is mounted on 3 rubberised castor wheels. Speed is adjustable from 750 to 3,000 rpm by a cone pulley arrangement. All contact parts are made out of stainless steel.
(Protein Foods and Nutrition Development Association of India Newsletter No. 23; 1981; 3)

298 Variable speed stirrer

Metrex heavy-duty variable-speed stirrers are suitable for continuous running in laboratories for a number of days. They are fitted with thermal overload relays. The speed is controlled by a variable-pitch pulley in the range of 1,000 to 2,500 or 500 to 2,000 simply by rotating a knob. The motor stops automatically when there is any problem during operation of heavy loads. The device is provided with a key-operated chuck to hold the stirrer shaft of 8 mm diameter in 30 cm length. It is fitted with a 3-blade propeller of 62 mm diameter complete with a heavy-duty stand cord and plug.
(Protein Foods and Nutrition Development Association of India Newsletter No. 65; December 1980; 2)

299 Magnetic stirrer for industrial use

Edmund Scientific offers a magnetic stirrer for use in research and development laboratories. It provides a fast and accurate method of stirring solutions. Utilizing solid-state speed control, the device locks the voltage at the required level, offering the user maximum control. Stirring speed can range from a slow turning to a violent 1,500 rpm churn. Complete with an on-off indicator light, the stirrer is housed in a sturdy cast aluminium case finished with chemically resistant epoxy. A teflon coated magnetic spinning bar, a cover plate offering 6" x 6" (15.24 cm x 15.24 cm) working area, and a grounded cord are included.
(Protein Foods and Nutrition Development Association of India Newsletter No. 23; 1981; 2)

300 Vibratory sifter

Pharma Electro Equipments have designed a sifter for all types of powders. It provides gyratory vibrations generated by out-of-balance flywheels. The amplitude of vibration is adjusted using a movable weight on the flywheel by a simple screw arrangement. This sort of movement effectively presents, in turn, all the faces of irregularly-shaped particles to the aperture, of the screen, and avoids bouncing of particles presenting permanent, clear screen aperture. Applications are in chemical, colour (non-edible/edible), food, pesticide and other industries. The device is available with double deck to separate two different sizes of powders or for very fine sifting. A special hood can be fitted to avoid any contamination.
(Protein Foods and Nutrition Development Association of India Newsletter No. 23; 1981; 1)

301 Rotostrainer strains solids from liquids

Hycor Corporation's Roto Strainer Model RFM 1212 is designed for liquid-solid operations requiring the straining of solids from liquids. This piece of equipment collects solid wastes and recovers fat, oils and greases that are sent to rendering. Low maintenance, high reliability. Sizes: 1 ft. to 10 ft. long; diameter: 25 in. to 36 in.
(Processed Prepared Food 150(1); 1981; 96)

302 Basket centrifuge

Remi basket centrifuge Model T-3000 consists of a stainless steel draining chamber with an outlet pipe and an inlet for continuous feeding. It also includes a perforated basket with 3 mm perforations; a variable speed regulator; a 120-minute timer; dynamic brake; speed meter; ammeter; zero starting switch; and unbalance cutout. Maximum speed is 5,000 rpm and cake capacity is 3,000 cc.

(Protein Foods and Nutrition Development Association of India Newsletter No. 65; December 1980; 5)

303 Hot air oven

Alfalab 140 laboratory and industrial hot air oven features double-wall construction. The outer body is made out of mild steel, and the inner wall is made out of mild steel, aluminium or stainless steel to suit requirements. The oven is built on a strong iron frame. The temperature is thermostatically controlled from ambient to 250 C with an accuracy of ± 2 C or better. The oven works on 230 V, single phase, 50 Hz supply.

(Protein Foods and Nutrition Development Association of India newsletter No. 65; December 1980; 2)

304 Geothermal energy for fish and cereal drying

A fish dryer run by geothermal energy has been constructed by Dr. Emerico Mendoza, Department of Agricultural Engineering and Technology, University of the Philippines, Los Banos. Barrio Bagong Kalsada, Calamba, Laguna, Philippines, is the site of a natural hot water-heated drying pilot plant, whose source of energy is the hot water available at temperature of 135-220 F (57-105 C) from a 180 feet (55 m) deep well.

Fresh fish come from the nearby Laguna de Bay and other major fishing ports. The fish are arranged in trays and loaded on to a truck, which is a utility arrangement capable of holding 22 trays. The truck, which has rollers at its bottom, is wheeled into a walk-in drying chamber for drying the fish.

The dryer has five heat exchange units made of copper tubing with spiral aluminium fins. Each exchanger has a gate valve that controls the amount of water flowing into it. Air is heated and distributed throughout the drying chamber by counter-current operations. Experiments with various drying patterns have established that optimal results can be obtained by drying each truckload for three hours. In a working day of 24 hours, eight trucks or

1000 kg of fish can be dried. Fish dried this way have better qualities, in terms of size, colour, saltiness, texture, etc., vis-a-vis sun-dried fish.
(RCTT Technical Digest 2(1); 1981; p 9)

305 Solar heat dehydrates onions, garlic

Gilroy Foods Co., a division of McCormick & Co., uses solar-heated hot water to help dehydrate 114 million kg(250 million lb) of garlic and onion products a year. According to Solar Times this project may be the first successful solar drying system for a large commercial food processor. The General Electric roof-mounted tube collectors heat water to 93.33 C (200 F). Air heated by the hot water blows over stainless steel drying belts. A microprocessor measures the solar radiation, controls the water flow, and turns the auxiliary gas heater on if it's needed at night - the solar system has no storage capacity.
(Agricultural Engineering 61(9); 1980; 31)

306 Solar drier

A vertical, bin-type, continuous, solar grain-drier has been developed by CMERI, Durgapur. The grain is dried by continuous blowing of hot air, obtained through solar heat collectors specially designed for the purpose. The drier can dry, on an average, one tonne of grain per day.
(Research and Industry 25(12); 1980; 231)

307 Rotary vacuum drying system

Fabdecon rotary vacuum drying system uses the principle that boiling point of liquids reduces with pressure. Capacities range from 10 litres to 3,000 litres. The vacuum dryer can be used for chemicals, pharmaceuticals, foodstuff and any other heat-sensitive material requiring low temperature drying or for hazardous material requiring controlled atmosphere. Material of construction can be mild steel, stainless steels of all grades, alloy steels, Hastelloy and abrasion resistant materials. Pilot trial facilities are offered to ensure suitability of such systems for individual applications.
(Protein Foods and Nutrition Development Association of India Newsletter 18; 1981; 1)

308 Spray dryer dehydration system

New nozzle-type spray dryer incorporates low temperature drying and cooling stage on an integral conveyor belt. A key factor in the system is a secondary drying process which results in the production of a non-hygroscopic fully agglomerated product with the benefit of low temperature drying.

Product is first fed into the primary drying chamber, where moisture is removed. It then passes through the secondary warm air drying chamber and to the cooling compartment where it is ready to be packed. Range of products successfully dried include baby food, tomato, cocoa, soy sauce powder and equally difficult materials.

(Food Engineering International June 1980; 64)

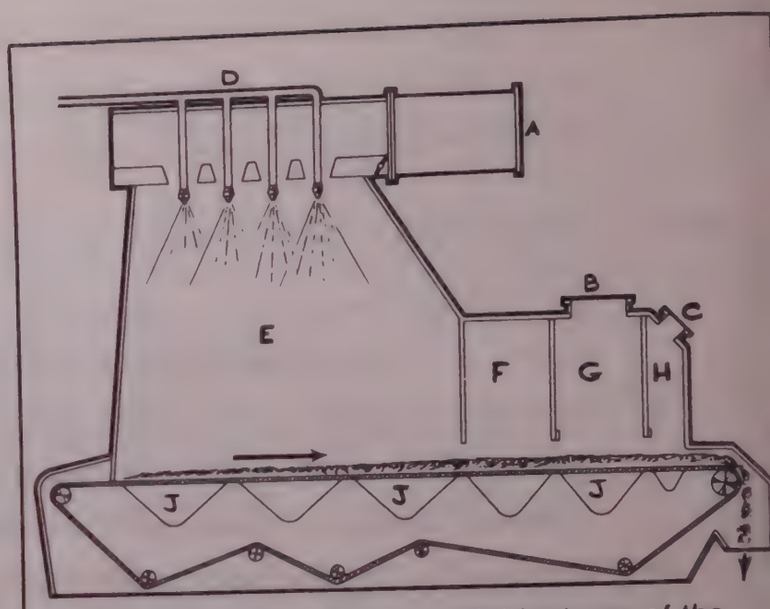

Diagram illustrates the essential features of the Filtermat, nozzle spray dryer.

A. Primary hot air
B. Secondary warm air
C. Dehumidified cool air
D. Product feed
E. Primary spray drying
F. Instantization
G. Secondary drying
H. Cooling
I. Air exhaust

309 Compact freezer/chiller

The Model JE-U7 compact Cryo-Flow freezer is a new low-cost CO_2 freezer designed for smaller processors and for handling delicate food products. It gently handles 500 to 1,000 lb/hr of fragile products such as diced eggs, diced poultry or diced onions, as well as hard-to-manage fruits. The freezer may be used to chill, crust or freeze. Its patented praso valves provide a controlled blizzard of CO_2 vapour and snow, and a freezing temperature range from 10 F to -110 F.

(Processed Prepared Food 150(1); 1981; 94)

310 Jackstones new mini tunnel freezer

The mini tunnel is based on the established and proven Jackstone continuous blast freezer mechanism. Its design capacity is, however, generally between 0.5-2.0 tons per hour against perhaps ten times this for the previous

large units.

All types of packaged food can be handled in the mini tunnel where they are gently marshalled from the production line into the freezer and fed on to carriers. The hydraulically operated tunnel mechanism progresses the carriers through all areas of tunnel to ensure uniform freezing. The product packages are not individually handled until discharged frozen from the tunnel thereby eliminating pack or product damage.

Modular construction of the mechanism permits future capacity increases.
(Food Trade Review 50(8); 1980; 426)

311 Cryogenic freezers increase efficiency

Ultra-freeze cryogenic freezers are designed to increase production efficiency with a minimal amount of floor space, according to the manufacturer. The freezers can operate with either carbon dioxide or liquid nitrogen and the modular design allows the customer to lengthen the freezer on location so that freezing capacity can be increased as demand for a product grows.

A variety of foods can be cooled or frozen by the machine, including meat patties, methalls, steaks, sausage, poultry parts, whole birds, shrimp, scallops, fillets, crab cakes, fruit, vegetables, pizza and more.
(Processed Prepared Food 150(1); 1981; 98)

312 Hot food cabinets

Economy Catering Equipment Manufacturing Company has also introduced hot food cabinets. These are designed in different sizes for canteens and kitchens for serving hot food in big establishments. The inside of the cabinets are fabricated in aluminium, whereas outside is in sheet steel construction. These units are fitted with electric heaters, temperature control arrangement etc.
(The Economic Times July 13, 1981; 7)

313 Spill control kit

Shandilya spill control kit reportedly provides a convenient, technically sound method for control of common hazardous chemical spills. It rapidly absorbs, neutralises, leaves a pleasant odour and prevents the spill from spreading, corroding and damaging. The kit consists of : Acigard (to control acid spillage); Caustigard (to control alkali spillage); Solvigard (to control solvent and other hazardous liquid chemical spillage); and clean-o-tools. Refills and bulk packs are avilable and industrial use.

(Protein Foods and Nutrition Development Association of India Newsletter No. 23; 1981; 4)

314 Continuous reading liquid level gauge

Alan Cobham Engineering Ltd of Blandford Forum, Dorset, has announced a new digital liquid level gauge which provides continuous display of depth. Tank depths of up to 3 m can be accommodated. In its standard form the gauge is suitable for tank operating pressures upto 150 psig and liquid temperatures upto 100 C.

The gauge comprises a tank-mounted probe connected to an independent control unit, which may be sited upto 1500 m away. Constructed of stainless steel, the probe is suitable for use with a wide range of liquids with a specific gravity down to 0.7. The control unit has a 4-digit display providing display of depth to a high degree of accuracy. High level and low level switching points are incorporated.

(Food Trade Review 50(12); 1980; 662)

315 Constant temperature circulating bath

Biochem constant temperature circulating bath is for circulating liquids at 10 C to 60 C through external apparatus requiring close regulation of temperature with control accuracy of ± 1 C. Reservoir capacity is approximately 30 litres. The bath chamber is 505 mm x 350 mm x 255 mm deep with 200 mm square opening. It is made out of aluminium with 8 cm glass wool insulation. Outer wall is made out of mild steel finished in high gloss synthetic enamel. Temperature is maintained using a hermetically sealed compressor, a 1 kW immersion heater and a mercury contact thermometer with relay. It is provided with a monoblock pump for external circulation. Inlet and outlet for the chamber are near the front panel. Controls include switches for the mains, cooler, heater and pump. Circulating water baths of other dimensions as well as with stainless steel tank can be supplied.

(Protein Foods and Nutritional Development Association of India Newsletter No. 65; December 1980; 4)

316 Electric and gas heating bulk cookers

Bulk cookers which are also known as boiling pans are very commonly used for preparing large quantities of rice, curry, meat, sambar, rasam, soups, dal, etc. Economy Catering Equipment Manufacturing Company, (15, Sweet House, Plot No. 442, 2nd floor, Pitamber Lane, Off. Tulsi Pipe Road, Mahim,

Bombay 400 016) manufactures these cookers with electrical heating as well as gas heating. The inner container is made of stainless steel, whereas the outer case is made of heavy gauge mild steel, attractively painted in hammertone finish. Best quality of replaceable type heating elements are incorporated at the bottom. The electric unit comes complete with temperature regulation device, including air break contactors. The gas heating unit is incorporated with heavy duty, industrial type gas burners, suitable for low pressure or high pressure gas supply. These units are made available in standard capacities of 70 litres as well as 140 litres.
(The Economic Times July 13, 1981; 7)

317 Chocolate coating gun

An Australian company EFCA Engineering (Victoria) Pty Ltd has developed a unit that will put an even chocolate coating on small items of confectionery.

This device is a chocolate spray gun said to provide a uniform coating with minimum clustering. A semi automatic unit, the system is recommended for small to medium output. Chocolate temperature is thermostatically controlled by water jacket and output capacity can be varied by using the adjustable nozzle and swivel action of the gun. An optional timing mechanism can be supplied for preset automatic spraying.
(Food Trade Review 50(10); 1980; 54)

318 Food molder

The Model I-480 high capacity wide belt food molder has a 38 in. wide discharge belt. Forming up to 24,000 round, oval, square or choppette patties per hour, the machine will operate at or below 30 F to cut freezing time, save energy and retain longer product bloom. It has a large capacity of 600 lb self feeding hopper which assures production efficiency, the manufacturer says. The model offers stainless steel construction with adjustable locking wheels to assure ease of cleaning and maximum portability.
(Processed Prepared Food 150(1); 1981; 98)

319 Paste and ointment machine

J.T. Jagtiani's fully automatic tube filling, sealing, crimping, and batch numbering machine comes complete with a 2-HP, 3 phase, 1,440 rpm, 50 Hz, 440 volt AC motor, totally enclosed with suitable reduction gear, and a screw adjustable device for increasing and decreasing the filling capacity. Also included are automatic filling, sealing, crimping and batch numbering devices,

no-tube no-fill device, and counting meter. The equipment is supplied with one filling pump for one particular size of tube and one set of digits 0 to 9. Applications include filling rubber solutions, toothpaste, shaving creams, ointments, jams, paints, inks and greases.
(Protein Foods and Nutrition Development Association of India Newsletter No. 23; 1981; 2)

PACKAGING

320 Packaging system reduces carton cost

An economical, flexible packaging system for granular products, frozen foods, dried vegetables, rice, pet-foods, etc. has been introduced by Esseltepac AB, Veddestavagen 7-9. S-175 62 Jarfalia, Sweden. Called the Cekathon, the product is said to cut carton costs by up to 30 per cent compared with standard top open cartons.

The single wall carton consists of a board sleeve with short flaps and is heat sealed at both ends by paper diaphragms. Sleeve materials that can be used include plain, plastics-coated, or aluminium plastics laminated board. Labels are suitably coated for heat sealing to the sleeve.

Fully automatic packaging machines are available for forming, filling and sealing of various styles of carton. The machines receive the sleeves from a magazine, form them, prefold bottom and top flaps, and heat seal bottom labels from another magazine. Filling can be performed with any type of filler after which the top label is heat sealed to the carton.

The machines can be fitted with units for code-marking, slip insertion, in-machine checkweighing, etc.
(Food Trade Review 50(8); 1980; 436)

321 New can-making technology developed

Two-piece steel beverage cans can be made without need for tin coating as a result of water-based lubricants developed by U.S. Steel. The technology cuts manufacturing costs $ 3.00 per 1000 cans. Waste cans can be fed directly into steel making processes for recovery without detinning. Disks punched from steel strip, coated on one side with molybdenum disulfide/acrylic wax and on the other side with a drawing wax, are formed into cup-shaped forms. Forms are drawn and pressed into can bodies. Lubricants are applied from conventional gravure coaters and removed during washing.

The firm is investigating means to recover molybdenum disulfide from the wash water for reuse.
(Chemical and Engineering News 58(34); 1980; 26)

322 Rubber lining of chemical vessels

Elastomer Lining Works manufacture rubber, PVC, FRP and ebonite linings for chemical vessels, pipes, bends, tees and agitators to protect them from acids and alkalis. The right type of rubber composition is designed to suit requirements. Turnkey projects are undertaken.
(Protein Foods and Nutrition Development Association of India Newsletter No. 65; December 1980; 4)

323 Plastic fix

Containers made from most types of plastic can be repaired quickly and economically, claims Alpha Plastics, of Hull. The firm's repair and welding service could save companies up to 90 per cent on previous replacement costs, it says, since plastic containers often have to be discarded after suffering only minor damage or small leaks.
(Baking Today 1(8); 1981; 49)

324 Bag sprinter

A new device for packing industry slips bags individually over a spout before being filled with free-flowing bulk goods, thus relieving the workers from a tedious and unhealthy manual job. Dubbed 'bbs-80' it is designed to load the bag holder with 600 to 1400 open polyethylene or PVC bags per hour, with bag dimensions varying from 45 x 80 cm to 60 x 105 cm. It is very useful for industries dealing with fertilizer, salt, sugar, fodder, plastic granules, etc. An important feature is that it can be fitted to any existing plant.
(Invention Intelligence 16(1); 1981; 47)

325 Change-over to new packaging for vanaspati

Vanaspati manufacturers have urged the Government to maintain the status quo, in respect of the packaging specifications or give the industry a period of 3 to 5 years from the date of finalisation of new specifications to effect the changeover.

At present, vanaspati is being packed in 1,2,4 and 16.5 kg and the rules

promulgated under the Standards of Weights and Measures Act necessitate change over to new standard packings of 5 kg, 10 kg and multiples of 5 thereof. This implies that the vanaspati industry has to commence packing vanaspati in 5 kg and 15 kg packs instead of present 4 kg and 16.5 kg from April 1, 1983. The specifications for the new packages have, however, not yet been finalised and notified by the Indian Standard Institution.

The Indian Vanaspati Producers Association (VPA) feels that it may not be feasible to change over by 1983 as there is inordinate delay in finalising and notifying the specifications.

(Hindu May 24,1981; p 6)

ANALYSIS

326 Measures cereal grain product constituents

Protein, moisture, oil and fibre content of cereal products may be measured using Model 102 Cereal Grain Analyzer.

The analyzer utilizes the principle of near infrared measurement. It is programmed with 16 completely independent grain and oil seed calibrations which can be used for analyzing wheat, barley, sunflower, soymeal, flour, and other related products. Each of the 16 calibrations has an independent set of 8 measurement wavelengths selectable from the 300 wavelengths available.

To operate the Model102, the sample is ground, placed into the instrument. The constituents are shown on a digital display 8 sec later. The analyzer has operating temperature extremes of 5 C and 40 C, and features a standard deviation on repeat readings of the same sample of 0.025%.

(Food Technology 34(12); 1980; 38)

327 IR instrument analyzes meats in 10 minutes

Super-Scan infrared (IR) analyzer utilized "short-beam" infrared technology to determine the content of fat, protein, carbohydrates, water, and ash in meat and meat products. The instrument analyzes a sample in 10 min, with all component results presented on a digital display and an automatic printout. Super-Scan is designed to be used in least cost formulation programs, and it can be interfaced with standard data processors. The instrument fits easily on a desk or table top and comes with a homogenizer pump, automatic printer, and sample preparation accessories as standard equipment.

(Food Technology 34(12); 1980; 44)

328 Gives microbial counts on food samples rapidly

Rapid viable microbial counts in food samples may be obtained using the computer-controlled Biocounter M2010.

The advantages of using this instrument are: rapidity, simple operation even for non-skilled personnel, and no need for a laboratory since tests may be done in the production facilities. For most sample types, results may be obtained in minutes. Coliform count is obtained in 4 hr and sterility in 6-16 hr. The sensitivity of direct measurement is 10^4 bacteria or 100 yeast cells per ml. Specific reagent tits are available for different applications. *(Food Technology 34(12); 1980; 46)*

329 Specific sugars and total starch measured in 1 minute

Model 27 Industrial Analyzer gives a direct, digital readout of the concentration of dextrose, sucrose, lactose, or starch in a sample. Some of the typical applications for the analyzer include determining dextrose during fermentation and in starch hydrolysates, spice mixtures, and corn syrups; sucrose in breakfast cereals and potatoes; lactose in baby formulás and dairy products; and starch in thickeners and corn grits. Starch may be measured without external hydrolysis using a Dual Injector Module accessory that attaches to the side of the Model 27.

To perform a test, the sample is solubilized, and 25 µl of the solubilized sample are injected into the analyzer's sample chamber. The instrument uses a thin film of oxidase enzyme, immobilized within a membrane, to produce hydrogen peroxide from substrates of the enzyme. The hydrogen peroxide is then measured by electrochemical oxidation at a platinum anode. The test is complete in 1 minute and the result displayed on the digital meter.

Since it is not an optical system, the instrument is not affected by colour or turbidity so no filtering, deproteinization, or decolorizing of the sample is required. The instrument features built-in temperature compensation, and because the enzymes are immobilized, they can be reused indefinitely.

(Food Technology 34(12); 1980; 42)

330 Detects and quantitates nitrosamines

TEA™ Model 543 Analyzer detects and quantitates a broad range of nitroso- and nitro- compounds including nitrosamines.

This Thermo Electron Analyzer is designed to interface with a gas chromatograph. The instrument reportedly features a selectivity for thermally labile nitro- and nitrosyl-releasing compounds of approximately 10^7 to 1 versus other nitrogen containing compounds. Pyrolysis temperatures from 350 to 1000 C permit analysis of compounds with various cleavage ranges. The analyzer provides detection limits of 0.1 ng, and requires minimal sample preparation.

Operating without plumbing or gasses, the instrument is compact, measuring 22-in x 24-in x 15½-in.

For more information on the TEA™ Model 543 Analyzer, write to Thermo Electron Corporation, Analytical Instruments, 125 Second Ave., Waltham, MA 02154.

(Food Technology 34(12); 1980; 46)

331 Fast protein analyser

Newport Instruments Ltd of Blakelands North, Milton Keynes MK 14 5AW, have developed the first intelligenttest protein analyser, a special microprocessor-based NMR spectrometer which performs measurements in less than 20 sec.

Apparently the P-10C protein analyser is up to ten times faster than many conventional methods of checking the protein content of edible oil crops and processed foods, and it uses new types of non aggressive chemical which are far safer and easier to work with under laboratory or quality control conditions.

(Food Trade Review 50(12); 1980; 665)

332 Measure headspace gas in soft or hard packs

The IL307 Head Space Oxygen Analyzers are designed for use by the manufacturers who must rely on controlled atmosphere inert gas packaging to extend product shelf life.

The instruments feature a polarographic sensor, specifically designed for small sample analysis. The tip of this sensor is covered with a replaceable membrane cap that is permeable to oxygen but impermeable to most contaminants. Oxygen present in the sample diffuses through the membrane

and is chemically reduced within the sensor. The resulting signal is conditioned, amplified and displayed on the digital panel meter as percent oxygen. The complete analysis takes less than 1 minute.

Two instrument configurations are available. The IL307-01 is designed for use of soft, flexible packaging and the IL307-02 is designed to be used on cans, bottles, and other hard packaging. To use, the operator simply pierces the package with the sampling arm, withdraws a small volume of head space gas and reads $\%O_2$ directly on the digital display. The instrument has 2 selectable ranges; 0-10% and 0-100% oxygen. The IL307 has automatic temperature compensation and calibrates in 30 sec. using the air in the room-no standard gases are needed.

For more information on the IL307 Head Space Oxygen Analyzers, write to Instrumentation Laboratory Inc., One Burtt Road, Andover, MA 01810.
(Food Technology 34(12); 1980; 40)

333 Chromatographic data recorder

Emco chromatographic data recorder EE250A has been designed to measure areas and corresponding retention times of peaks from all types of chromatographic detectors. It is an all-digital system incorporating a digital integrator for measuring peak areas and a digital clock for measuring retention times. Manual range selection for peak heights from 1 m V to 1 V full scale and peak widths from 10 seconds to 10,000 seconds is provided. Retention time range is from 1-9,999 seconds with time overflow indication. Area is displayed over a 4-digit LED display. Both area and retention time parallel BCD outputs are provided for interfacing with a digital printer. The instrument accepts fully floating, differential inputs with high input impedance and common mode rejection. Unique peak detection and processing circuitry integrates only true peaks based on the width criterion. Front panel control is provided to reject all peaks with widths less than a setting which is adjustable from a minimum of 0.5 second to well over 5 seconds. Both area and retention time are accurate within ± 0.1% of reading. Applications are in laboratory analytical work using gas/liquid chromatographs. The device can be connected directly to a detector on in parallel with a strip-chart recorder. It works on 230 V, 50 Hz mains supply and consumes approximately 40 W power.
(Protein Foods and Nutrition Development Association of India Newsletter No. 65; December 1980; 3)

334 Digital pH meter

The Metcon digital pH meter totally avoids frequent checking with known buffers, and readjustments. Humidity and moisture are reported to have been totally avoided and a straight measurement, immediately on switching on is possible. Because of microminiaturisation in electronic circuitry, the instrument weighs only 2 kg, approximately. Servicing is practically not required. There is a self-check for 4.00 pH, which assures the functioning of the electronics of the instrument.
(Protein Foods and Nutrition Development Association of India Newsletter No. 65; December 1980; 1)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

335 All India final estimates of nigerseed

State	Area (thousand hectares) 1980-81	Production (Thousand tonnes) 1980-81
Andhra Pradesh	10.0	6.3
Bihar	44.4	16.4
Karnataka	52.0	8.9
Madhya Pradesh	227.8	33.1
Maharashtra	102.0	17.9
Orissa	161.5	63.3
Dadra & Nagar Haveli	0.5*	0.3*
ALL INDIA	598.2	146.2

* Last year's data repeated in the absence of information for 1980-81

Notes : 1. Nigerseed crop is not grown to any appreciable extent in other States and Union Territories not mentioned above.

2. No information regarding crop estimates is yet available from the Government of Sikkim.

PRODUCTION (INDUSTRIAL)

336 Yield and cost of alcohol

Commodity	Yield hectare (in tonnes)	Alco yield (in litres)	Alco hectare (litres)	Commodity market price per tonne	Alco price per litre (Rs.)
Sugarcane	56.00	70	4000	150	2.54
Molasses	2.50	225	365	60	0.70
Maize	3.50	350	1125	900	3.00
Tapioca	16.00	180	3000	250	2.10
Sugar beet	20.00	90	1800	160	0.25
Potato	15.00	110	1650	600	5.00

(*Economic Times August 5, 1981; p 4*)

EXPORT

337 Exports of Oilseeds, Oils and Oilcakes from India

(April 1978 - March 1979)

Oilseeds	Quantity Tonnes	Value Rupees
Copra	566	17,31,889
Groundnut Kernel H.P.S.	4,055	2,63,77,059
Groundnut in Shell H.P.S.	4,445	2,88,37,050
Cottonseed	312	2,75,582
Mustardseed	2	15,319
Sesameseed	2,725	1,84,36,426
Nigerseed	5,915	6,18,06,105
Safflowerseed	1.5	2,319
Others	28	1.77.016
Oils		
Soyabean Oil	8	35,245
Groundnut Oil	430	31,04,808
Rape & Mustard Oil	13	1,75,013
Linseed Oil	3	28,510
Palm Oil	1,980	1,16,81,009
Coconut Oil	12	1,17,779
Castor Oil	5,357	3,36,22,515
Dehydrated Castor Oil	111	9,57,623
Cashewshell Oil	5,821	4,80,49,337
Mowra Oil	50	4,91,145

contd.

Oils (contd.)	Quantity Tonnes	Value Rupees
Kokum Oil	366	97,68,457
Salseed Oil	1,479	1,61,95,300
Mango Kernel Oil	165	14,29,491
Other Oils	829	1,01,07,012
Other Oils	50	35,38,478
Hydrogenated G'nut oil	681	71,70,990
Others	1,633	2,43,51,638
Sal Fat	227	28,03,301
Oilcakes		
Soyabean Oilcake Extraction	52,500	8,71,26,186
Groundnut Oilcake Extraction	5,38,493	74,09,53,278
Decorticated Ctn'seed Expeller	55,038	6,64,75,748
Decorticated Ctn'seed Extraction	1,15,077	18,04,09,944
Undecorticated Ctn'seed Expeller	3,515	41,92,022
Linseed Oilcake Expeller	1,696	23,63,147
Linseed Oilcake Extraction	25,111	3,63,84,274
Sunflowerseed Extraction	973	7,01,780
Rape-Mustard Extraction	11,192	1,11,04,902
Copra Oilcake Expeller	301	2,38,038
Copra Oilcake Extraction	4,856	37,82,044
Mowra Oilcake Expeller	396	2,21,285
Kardi Oilcake Extraction	14,106	87,53,579
Sesameseed Oilcake Expeller	674	8,82,841
Sesameseed Extraction	5,541	79,65,911
Mango Kernel Extraction	3,879	17,91,418
De-Oiled Sal Oilcake	13,473	37,15,443
Other Oilcake Expeller	755	8,35,694
Other Oilcake Extraction	313	2,61,823
Compound Animal Feed	61,363	8,49,99,969
Deoiled Rice-Bran	4,78,826	19,61,56,712

(Oils oilseeds J. Feb.-March, 1981, p 29)

Items

338 • Marine products exports from India

Q = Quantity in tonnes V = Value in Rs. '000 U.V. = Unit value Rs/Kg

Items	1978-79		1979-80		1980-81	
	Q	V	Q	V	Q	V
Frozen shrimp	51162	1947849	51068	2112488	51358	2017844
Frozen lobster tails	732	51431	560	40623	610	34826
Frozen frog legs	4087	99163	2926	63367	3452	84054
Fresh & Frozen fish	16757	97539	22629	33186	8769	82394
Frozen cuttle fish & millets	1062	19060	1551	42861	1220	19399
Frozen squids	2755	36937	2244	29610	1705	19732
Canned shrimp	197	8785	231	11305	281	11264
Dried fish	6909	36603	3357	15652	3887	24355
Dried shrimp	19	285	19	158	113	1232
Shark fins & fish maws	416	33242	341	26835	390	36446
Miscellaneous items	2798	15333	1475	12160	3806	16880
Total	86894	2346227	86401	2488240	75591	2348426
	U.V. = 27.00		U.V. = 28.80		U.V.= 31.01	

(Economic Times September 2, 1981; p 4)

339 Prospects of Cardamom exports in 1980s

According to the Cardamom Board, the current world production of cardamom is estimated to be around 7,000 tonnes, shared by India (57 percent), Guatemala (33 per cent), Tanzania (6 percent) and Sri Lanka (4 percent). The total supply of cardamom by the producing countries to the world markets is around 5,500 tonnes in which India accounts for 52 per cent and Guatemala 41 percent and the- rest by others. A study of the world market situation indicates that presently the total world demand outstrips the world supply indicating a position of seller's market. As domestic consumption in India is more or less stable at around 1,200 tonnes per annum, any increase or decrease in production is directly reflected in exports. While it is true that all the cardamom currently produced finds a ready outlet the world markets, the Board says that the need is to cautiously expand cultivation.

Apart from India, Guatemala, Tanzania and Sri Lanka, it is learnt that, of late, some of the Central American countries neighbouring Gautemala, viz. Honduras, Nicaragua, El-Salvador, Costa Rica, etc. have already initiated cardamom cultivation on a small scale. It is also learnt that small areas under cardamom have already come into production in Papua New Guinea lying off the coast of Australia and they have a programme of expansion in future. As such, the potential for increased world production of cardamom in the near future underlines the immediate need for global export promotion.

Under these circumstances, India's long-term strategy is one of increasing production by way of attaining higher productivity and lower costs and thereby ensuring steady and remunerative returns to the growers without serious stress on area expansion. Even if there is a fall in unit price consequent on higher supplies in future, the present level of income can be maintained by higher output, with appropriate export promotion measures. The short-term strategy is to increase production to the extent possible by intensifying the current development programmes and to export maximum quantity especially to the oil-rich Arabian markets.

The total area under cardamom in India is estimated around 93,000 hectares, distributed in the three Southern States of Kerala (59 percent), Karnataka (31 percent) and Tamilnadu (10 percent). Over the last 10 years, there has been no significant increase or decrease in the area under crop. Out of the total area of 93,000 hectares, only 75 per cent, i.e., about 70,000 hectares is estimated to be at the yielding stage on account of the process of replantation of uneconomic areas.

On account of increasing pressure on land and the limited availability of land suitable for cardamom cultivation, emphasis would be on maximum production through intensive cultivation from the existing area.

The production and productivity of cardamom in India have gone up in recent years.

Apart from favourable climatic conditions, various other factors also contributed to the attainment of the higher productivity during recent years. They include use of better inputs, demonstration campaigns on 'Azhukal' disease control, pest control, mulching against drought etc., supply of better quality seedlings through the department as well as certified nurseries.

The main strategy in the perspective period is to obtain maximum productivity by intensive cultivation in the potential areas and also to

produce more green bold cardamom thatcan fetch a premium price in the Middle East Arabian markets.

The projected production figures of cardamom during 1980s are as under:

Year	Production (tonnes)	Yield per hectare (kgs.)
1980-81	4,500	65
1981-82	4,750	68
1982-83	5,000	72
1983-84	5,250	75
1984-85	5,500	79
1985-86	5,750	83
1986-87	6,000	86
1987-88	6,250	90
1988-89	6,500	93
1989-90	6,750	97

Figures of production, export and export earnings during the last two years are given below :

Year	Production September-August	Export Quantity (tonnes) (April-March)	Export Value (Rs. million)
1978-79	4,000	2876	583.5
1979-80	4,500	2671	498.0

In recent years, besides cardamom capsules, the country has been exporting other cardamom products like cardamom oil, cardamom husk, cardamom spent seeds etc.

It could be seen from the above table that with the increase in production, exports have also gone up in recent years. However, during 1979-80, even though production went up by 500 tonnes from the previous year's position, the exports for thefinancial year 1979-80 did not increase proportionately. This is mainly on account of the fact that goods have not moved fast as in the previous years due to lack of orders from the importing countries. Unlike in the past, India's main competitor, viz. Guatemala has emerged a serious competitor.

The year 1977-78 set a new record in the history of cardamom industry registering a production of 3,900 tonnes and exporting 2,763 tonnes and earning

foreign exchange worth Rs. 484.4 million. The year 1978-79 again marked still new record in all counts, viz., production, exports, export earnings and unit value realisation - exporting 2,876 tonnes valued at Rs. 583.5 million.

Prior to 1977-78 the level of export had not exceeded 2,000 tonnes except in 1971-72 when production also recorded a hike. Similarly, the export earnings, which had not crossed Rs. 190 million until 1976-77, had gone up to Rs. 480 million during 1977-78 and again shot up to Rs. 580 million during 1978-79. The annual average export price which was only Rs. 82 per kg. during 1974-75 had shot upto Rs. 157 per kg during 1976-77. The increasing trend in price could be maintained during the years 1977-78 and 1978-79 also inspite of higher production during these years.

However, keeping in view the production expansion programmes in other producing countries in the coming years, aggressive export promotion measures coupled with efforts for finding new markets and new end uses for cardamom is also considered. The volume of export is expected to reach the level of 5,250 tonnes during 1989-90 from the base level of 3,800 tonnes during 1980-81. The compound rate of growth per annum is 5.3 per cent. *(Economic and Commercial News 11(8); 1981; 9-10)*

IMPORT

340 Imports of oilseeds, oils and oilcakes into India (April 1978 - March 1979)

Oilseeds	Quantity Tonnes	Value Rupees
Groundnut in Shell	10	11,500
Soyabeans	516	23,09,219
Cottonseed	67	56,240
Rapeseed	97,838	27,20,27,880
Copra	41,872	16,86,39,843
Palmnuts & Palm Kernels	602	21,90,326
Linseed	1,702	44,96,394
Castorseed	26	47,500
Mustardseed	1	41,328
Others	3	2,78,637

Oils	Quantity Tonnes	Value Rupees
Soyabean Oil	3,50,617	1,81,69,33,785
Cottonseed Oil	6	49,581
Groundnut Oil	9,678	53,69,55,136
Olive Oil	44	9,63,861
Sunflowerseed Oil	30,722	16,61,13,528
Rapeseed Oil	2,51,995	1,27,20,79,619
Linseed Oi	206	10,33,794
Palm Oil	3,97,331	2,02,43,21,515
Coconut Oil	3,793	2,34,45,006
Castor Oil	4	9,49,502
Sal Oil	82	6,33,037
Tung Oil	92	15,29,040
Other Oil	2,065	1,24,73,058
Other Oils	203	17,00,605
Mutton Tallow	20,045	8,23,44,736
Oilcakes		
Deoiled Rice Bran	275	6,86,299
Solvent Extracted Soyabean Oilcake	31	36,327
Groundnut Oilcake Expeller	153	1,75,687
Groundnut Oilcake Extractions	44	40,500
Linseed Oilcake Extractions	9	7,000
Mustardseed Oilcake Expeller	4	2,860
Mustardseed Oilcake Extraction	627	8,12,211
Mango Kernel Extraction	1	2,700
Deoiled Salseed Oilcake	476	2,54,914
Other Oilcake Expeller	7,409	76,22,204
Other Oilcake Extractions	1,332	9,72,325

(Oils Oilseeds J. Feb-Mar. 1981; p 29)

341 Import of dates under OGL

The Government has allowed the import of wet or dry dates under the Open General Licence (OGL) by any person, by steamers.

The import of this commodity is at present allowed by sailing vessels alone.

The Government has extended the import facility by steamers in view of representations that large quantities of dates could not be imported due to disruption of sailing vessels traffic to meet the growing demand for dates during the month of Ramzan.

The new facility will be available only for shipments upto August 6 next.

(The Hindu July 11, 1981; 13)

342 FTC plans rule on advertising food as "natural"

The Federal Trade Commission (FTC) has announced that it plans to issue a new Trade Regulation Rule that would prohibit advertising a food as "natural" if the food contains "synthetic or artificial ingredients" or if the food is more than minimally processed.

Under the rule, the baking process would qualify as minimal processing but the bleaching of flour would not. In addition, the rule would specify that ingredients that FTC considers highly processed, such as refined sugar and hydrogenated oil, must be disclosed. Therefore, according to FTC, an ad could state"natural but contains bleached flour".

FTC hopes to promulgate the rule by the end of this year. Since the rule will be subject to legislative and judifical review it probably will not take effect until late next year.

(Cereal Foods World 25(11); 1980; 717)

343 Diluted juice labeling

The Food and Drug Administration has issued a regulation establishing a common or usual name for diluted fruit and vegetable juice beverages other than diluted orange juice beverage. The common or usual name will be a descriptive name - for example, "diluted grape juice beverage" or "grape juice drink" must be accompanied by a label statement of the percentage of each juice contained in the beverage, by volume, in increments of 5 per cent. The labeling requirements will be effective July 1, 1981. FDA simultaneously revoked regulations, which had been stayed, which would have established standards of identity for cranberry juice cocktail, artificially sweetened cranberry juice cocktail, lemonade, coloured lemonade, limeade, and canned pineapple grapefruit juice drink. FDA said the regulation establishing a common or usual name for diluted beverages other than orange juice will achieve the goal of the stayed regulations.

(Food Production Management 103(1); 1980; 23)

344 Detection method for adulterated apple juice

A U.S. Department of Agriculture researcher reports on a new method for detecting adulterated apple juice.

Landis W. Doner, research chemist with the USDA's Science and Education

Administration (SEA) at the Eastern Regional Research Center in Philadelphia, together with John G. Phillips, a consulting statistician with SEA's North-eastern Region, developed a method to detect apple juice adulterated by high-fructose corn syrup (HFCS) but labelled as containing no added sugar.

Their method, called stable carbon isotope ratio analysis, takes advantage of the fact that most fruits including apples produce sugars differently than do corn, sugarcane, sorghum and other sources of inexpensive sweeteners.

HFCS cannot be detected through conventional sugar analysis since both its sugar composition and sweetness are identical to the sugar of pure apple juice. Since corn sugars are naturally more enriched with carbon-13 isotopes than fruit sugars, by measuring the ratio of carbon-13 to carbon-12 in apple juice with an instrument called a mass spectrometer, added sweeteners can be readily distinguished from the fruit sugars. By comparing the mixture's isotope ratio to that of pure apple juice, which has a naturally lower carbon-13 to carbon-12 ratio, researchers can estimate the level to which the apple juice has been adultered. No relationship was found between carbon-13 to carbon-12 ratio and the variety or geographical origin of the apples.

Following the finding that apples uniformly have lower carbon-13 to carbon-12 ratios than HFCS, a collaborative study with the University of Rhode Island, the University of Quebec at Montreal, Coastal Science Laboratories, Inc., Kreuger Enterprises, Inc., Brigham Young University, and the Technical University of Munich demonstrated that the addition of corn sweeteners to apple juice can be "unequivocally" detected by the stable carbon isotope ratio analysis method.

Doner said an independent survey of more than two hundred samples of apple juice and apple juice concentrates showed that over a third were adulterated.

Federal regulation prohibits the labelling and selling of adulterated products as pure products. But according to Doner, until the isotope ratio analysis method is sanctioned as an official method for detecting adulterated apple juice, regulatory agencies will have no practical method to detect fraudulently labelled apple juice.

(Food Production Management 103(4); 1980; 18)

345 FDA amends rule for sodium stearoyl-2-lactylate

FDA has amended the food additive regulations for sodium stearoyl-2-lactylate "to provide for additional uses and functions, establish tolerances for currently regulated uses, revise the name of the additive to sodium stearoyl lactylate, and incorporate the specifications prescribed for it in the 'Food Chemicals Codex" (45 FR 51766-51767). The regulations took effect August 5, 1980.

According to the new regulations, sodium stearoyl lactylate may be used in food in accordance with a number of prescribed conditions, which include the following: as a dough strengthener, emulsifier, or processing aid in baked products, pancakes, and waffles in an amount not to exceed 0.5 part for each 100 parts by weight of flour used; as a surface-active agent, emulsifier, or stabilizer in icings, fillings, puddings, and toppings, at a level not to exceed 0.2% by weight of the finished food; as an emulsifer, stabilizer, or texturizer in cheese substitutes and imitations and cheese product substitutes and imitations in an amount not to exceed 0.2% by weight of the finished food.

(Cereal Foods World 25(9); 1980; 615)

346 FDA denies cyclamate petition

FDA denied a petition by Abbott Laboratories, North Chicago, IL, to remarket the artificial sweetener cyclamate. FDA Commissioner Jere E. Goyan said that, after reviewing all the data submitted by Abbott, the agency concluded that cyclamate had not been shown to be safe. He said the evidence shows some increased incidence of some types of cancer and of genetic damage that could lead to inheritable diseases such as Down's syndrome.

Abbott Laboratories, the only U.S. producer of the sugar substitute, decided not to appeal FDA's denial. Abbott first petitioned to remarket the compound in 1974 and has been turned down twice previously in its seven-year battle.

(Cereal Foods World 25(11); 1980; 717)

347 Caustic peels considered 'Hazardous Wastes'

The Environmental Protection Agency (EPA) has informed National Food Processors Association that EPA could not redefine hazardous waste regulations to exclude caustic peel wastes with a pH of 12.5 or greater.

The peel wastes are created by dry caustic peeling, a processing

technique developed by the food industry in cooperation with EPA grant funding to conserve water, reduce the amount of soluble and suspended solids entering the wastewater stream, and reduce the amount of product lost in peeling.

Under regulations issued by EPA May 19, a plant producing peel waste at or above pH, 12.5 is considered a generator of hazardous wastes. Adjusting pH level of the waste material below 12.5 by adding acid, mixing in raw cull material, or by bubbling carbon dioxide through it, is considered treatment of hazardous waste.
(Food Production Management 103(3); 1980; 23)

348 New U.A.E. packaging regulations

Certain new regulations regarding packaging of canned food items have been stipulated by Dubai, a major port of entry in the U.A.E. Accordingly the expiry date of goods have to be punched on the metal lid, while the bottles should have the expiry date printed on the caps. Dates printed on labels or stickers will not be acceptable. These rules are reportedly applicable to the whole of the Gulf region.
(Seafood Export Journal 13(7); 1981; 30)

349 FDA issues proposed rule on caffeine

FDA has issued a proposed interim rule on caffeine that would delete caffeine from the generally recognized as safe list, declare that no prior sanction exists for the use of caffeine as an added food ingredient, restrict the use of caffeine as an additive to current uses and levels, and require that addition of caffeine to a product be reflected in the product label (45 FR 69817-69838 October 21, 1980).

The proposed rule would permit up to 200 ppm of caffeine to be added to baked goods, frozen dairy desserts and mixes, gelatins, puddings, fillings, and soda water, and it would allow up to 400 ppm to be added to soft candy as a flavouring agent.

It would eliminate caffeine as a mandatory ingredient for cola and pepper-type drinks and would designate kola nut extract as the mandatory, characterizing ingredient in the beverages.

Under the proposed rule, any added caffeine would have to be listed as an ingredient regardless of whether it was a standardized food.

The interim order would not directly affect the caffeine that occurs naturally in such foods as coffee and tea.

Comments on the proposed interim rule must be mailed by December 22, 1980, to the Dockets Management Branch (HFA-305), Food and Drug Administration, Rm.4-62, 5600 Fishers Lane, Rockville, MD 20857.
(Cereal Foods World 25(12); 1980;.769)

350 Monosodium glutamate termed 'SAFE'

The Food and Drug Administration (FDA) recently has been advised by a scientific review committee that monosodium glutamate should continue to be on the agency's list of food ingredients generally recognized as safe (GRAS). The committee found "no evidence that MSG poses a hazard to adults at present levels of use". It was recommended that additional studies on MSG's safety be conducted" only if a significant increase on consumption occurs".
(Food Production Management 103(2); 1980; 32)

351 No nitrates ban

The FDA and Agriculture Department jointly announced on August 19 that they will not take action to ban nitrates in foods at this time. The decision was based on a second review of an original study suggesting nitrates caused cancer. A group of independent pathologists involved in the new review found much lower incidence of lymphoma", or lymph cancer, than was originally reported, according to the announcement.

In announcing their decision, FDA Commissioner Jere Goyan and USDA Assistant Secretary for Food and Consumer Services, Carol Tucker Foreman said, nevertheless, that they would continue efforts to eliminate preformed nitrosamines, which the agencies have been doing through a program of monitoring food and consumer products. Efforts to reduce or eliminate nitrosamines from such products as bacon and beer have been "highly successful", according to the statement.
(Food Production Management 103(4); 1980; 26)

352 Final rules of WIC program limit sugar

The final rules on the types and quantities of supplemental foods to be provided under the women, infants and children (WIC) program limit the sugar content of WIC cereals to six grams per ounce, or no more than 21% by weight (45 FR 74854-74877 November 12, 1980).

USDA's Food and Nutrition Service (FNS), the authorizing agency of the WIC program, defended this limit by citing the relationship between sugar and dental caries. It also noted that, because highly sugared cereals generally are more expensive, allowing them would be "inconsistent with the goal of teaching participants economical food buying patterns". The new rules also limit the amount of cheese allowed in packages to save money and to limit sodium consumption.

FNS did not adopt a proposed revision that would have cut the iron requirement for cereals from 45 to 25% of the U.S. RDA. However, it asked USDA's Science and Education Administration to perform research to determine if the iron used in cereals containing 25% of the US. RDA for iron are more bioavailable than the forms of iron used to fortify most cereals with 45% of the U.S. RDA for iron. The agency said that, when the information from these studies becomes available, it will reassess the iron requirement for cereals provided through the WIC program.
(Cereal Foods World 26(1); 1981; 33)

353 Export duty on coffee reimposed

The Central Government has reimposed export duty on coffee at the rate of Rs. 85/- a quintal with effect from November 12 following a review of the price trends in international markets.
(Hindu November 13, 1981; p 1)

QUALITY CONTROL

354 Prevention of Food Adulteration (II Amendment) Rules 1981

G.S.R. 290(E) - Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by subsection (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) with the notification of Government of India in the Ministry of Health and Family Welfare (Department of Health) No. G.S.R. 15,16, dated the 24th November, 1979 at pages 2967 to 2975 of the Gazette of India, Part

II, Section 3, sub-section (i), dated the 22nd December, 1979 for inviting objections and suggestions from all persons likely to be affected thereby before the expiry of 60 days from the date on which the copies of the Official Gazette in which the said notification was published, were made available to the public;

And whereas the copies of the said gazette were made available to the public on 14th January, 1980;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government.

Now, therefore, in exercise of the powers conferred by sub-section (1) of the section 23 of the said Act, the Central Government after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely:

RULES

1. (i) These rules may be called the Prevention of Food Adulteration (II Amendment) Rules, 1981.

(ii) They shall come into force on the date of their publication in the Official Gazette except rules 2 and 4 (d) which shall come into force six months after the date of the publication/

2. In the Prevention of Food Adulteration Rules, 1955 hereinafter referred to as the said rules, in rule 49, after sub-rule (10) the following sub-rules shall be inserted, namely:

(11) No person shall sell lactic acid for use in food except under Indian Standards Institution Marks.

(12) The Katha prepared by Bhatti method shall be conspicuously marked as 'Bhatti Katha'.

3. In rule 50 of the said rules :

(a) in sub-rule (I-A), after the words "more articles of food" the following shall be inserted namely

"and also for different establishments or premises in the same local area".

(b) for sub-rule (4), the following sub-rule be substituted, namely:

"(4) If the articles of food are manufactured, stored or exhibited for sale at different premises situated in more than one local area, separate applications shall be made and a separate licence shall be issued in respect of such premises not falling within the same local area :

Provided that the itinerant vendors who have no specified place of business, shall be licensed to conduct business in a particular area within the jurisdiction the licensing authority".

4. In Appendix B to the said rules,

(a) in item A. 11.02.08, in the first paragraph the words 'may be proportionately reduced but" appearing towards its end shall be omitted;

(b) in item A.15.07, for the words, figures, brackets and letters "one part to 40,000 parts (25 ppm) by weight of potassium iodate or one part of 50,000 parts (20 ppm) by weight of potassium iodide or equivalent iodine", the words, figures and letters "the potassium iodate content shall be in the range of 25-35 ppm at manufacturers level and shall not be less than 15 ppm in distribution channel including retail level" shall be substituted;

(c) after item A.16.12, and the entries relating thereto, the following shall be inserted,namely:

"A.16.13-Spices based sauce like chillies sauce shall be the product derived from any suitable variety of spices or condiments, singly or in combination. Such spices shall be wholesome and practically free from fungal or insect attack. The only substance that may be added are, spices-fresh, or dried, sugar, salt, vinegar, acetic acid, citric acid, fumaric acid, onion, garlic, flavouring agents, permitted preservatives, permitted stablizers and emulsifiers. It may contain caramel, but shall not contain any coaltar food colour. It may also contain small quantities of vegetable, fruit pulp or juice.

The total acidity in terms of acetic acid shall not be less than 1.0 per cent and total soluble solids shall not be less than 10.0 per cent by weight".

(d) in item A.21, the following provison shall be added at the end, namely:

"Provided that in case of Bhatti Katha, the ash insoluble in dilute hydrochloric acid on dry basis shall not be more than 1.5 per cent. The Bhatti Khatha be marked as required in sub-rule (12) of rule 49".

(Gazette of India (Extraordinary); Part II, Section 3; subsection (i); No. 147; April 13, 1981; p 656-657)

355 Chronic toxicity of caffeine

The experiment by U. Mohr, J. Althoff of Hannover, Germany and K. Morgareidge of Aiken, SC on long-term chronic toxicity/carcinogenicity of caffeine gave the following results. Caffeine was administered to groups of 50 male and 50 female rats via the drinking water at concentrations of 2,000, 930, 430 and 200 mg per litre ad libitum. In males, these doses were approximately 108, 50, 27 and 12 mg per kilogram per day. In females, the doses were approximately 197, 87, 31 and 19 mg per kilogram per day. A concurrent double size control group received only plain water. With the possible exception of males given 2,000 mg per liter, there was no apparent correlation

of dosage with longevity. From the inception of the study, the high dose group (2,000 mg per liter) exhibited a depressed growth rate for both sexes. Food consumption was unaffected by treatment whereas water intake was affected with lowered intakes being observed at the highest dose level and maximum intake being observed at the 200 mg per liter dose level. Preliminary observations on gross tumor incidence as a function of time to the one hundred fourth week did not indicate any caffeine-related effects.
(Nutrition Reviews. 39(4); 1981; p 190-191)

356 Safety of nitrite-cured meats

The Agriculture Department (USA) has declared that with the exception of most types of bacon, nitrite-cured meats such as hot dogs, corned beef, and sausages do not form nitrosamines upon cooking.

USDA began a study of the nitrosamine content of variously cured bacons, cooked sausages, fermented sausages, pickle-cured products, perishable canned products, shelf-stable products, and sterile canned products. Except for pumped bacon, the most widely sold type of bacon in which liquid nitrite cures are injected into pork bellies, and possibly immersion-cured bacon in which the cure is soaked into the pork bellies, and dry-cured bacon in which the cure is rubbed into the pork, all other nitrite-cured meats tested were found not to form "confirmable" nitrosamines upon frying, boiling, baking, or cooking in a microwave oven.

The question of whether nitrite itself is a cancer-causing agent was not decided by the three-year-long study of nitrosamines in nitrite-cured meats. Assistant Secretary of Agriculture, Carol Tucker Foreman says, the nitrite cancer-causing issue "will be evaluated separately".
(Chemical and Engineering News 58(27); 1980; 6)

357 Sale of talc-coated rice banned by Puerto Rico

The battle over talc-coated rice is heating up again. The Puerto Rica Department of Consumer Affairs has banned sales of talc-coated rice following two-year study by Dr. Angel Roman-Franco of the Puerto Rico Cancer Institute, which found talc to be a cause of stomach cancer.

A mixture of talk and glucose is routinely used to preserve rice during shipment to some markets and to give it a shiny "clean" look preferred by many Asians and Latin Americans. Package labels instruct consumers to wash off the coating before cooking the rice, but Dr. Roman Franco said that

washing fails to remove all the talc.
(Food in Canada 41(4); 1981; 12)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

358 New fruit canning unit

A proposal to set up a fruit canning and juice bottling centre in Chittoor district, A.P. was under consideration. Also an agro-chemical industry at Kovvur was also being envisaged. During the course of next year the following industries may materialise: Corn products industry at Nizamabad, a micro-nutrient plant and a malathion plant at Patancheru.
(Industrial Development News 15(2); 1980; 15)

359 Malt extract plant

Swadeshi Malt and Allied Industries Limited has decided to set up a malt extract plant with a capital outlay of Rs. 22 lakhs at its existing malt unit at Alwar in Rajasthan.
(Industrial Development News 15(8); 1980; 81)

360 Production of coconut based chemicals

The establishment of a $ 40 million coconut chemicals complex at the island of Mindanao, will make Phillippines a leading producer of coconut-derived chemicals by 1982. According to experts in coconut chemistry over 800 products can be produced or processed from coconut oil.

Methyl coconate, refined glycerine and fractionated coconut alcohols are already being produced. Methyl coconate is hardly known in India as a chemical in industry. Sodium lauryl sulfate, a high value surfactant is priced at 5-times the price of coconut oil. This surfactant has varied application in the production of toothpastes, detergents, shampoos and toilet soaps.
(Indian Chemical Journal 15(8); 1981; 25-26)

361 Glucose, dextrose and starch from maize

The Punjab State Industrial Development Corporation's (PSIDC) unit to manufacture glucose, dextrose and starch from maize costing about Rs. 8 crores is nearing completion and is likely to be commissioned in October this year.

This plant is located near Sangrur - a maize growing area of Punjab.
(Industrial Devcelopment News 15(7); 1980; 73)

362 Glucose and starch unit

The project report for setting up glucose and starch unit at Imphal based on locally available maize was being examined. The project would cost Rs. 4.15 crores and the capacity of the plant would be 7,000 tonnes of starch, 3,000 tonnes of glucose and 2,020 tonnes of dextrose.
(Industrial Development news 15(2); 1980; 15)

363 Cashew feni distillation unit

A cashew feni distillation unit may be set up in Andhra Pradesh by the A.P. State Forest Development Corporation in collaboration with a Goan firm. Efforts are under way to obtain the required technical know-how from Goa. The unit may be set up as a joint venture with a Goan distillery. Kavali in Nellore district or Satyavedu in Chittoor district would be the location of the unit. Tentatively, the project is estimated to cost Rs. 10 lakhs.
(Industrial Development News 15(5); 1980; 40-41)

364 Hops processing unit commissioned

The Chemical Engineering and Design Section of Regional Research Laboratory, Jammu, has designed and fabricated a Hops Processing Unit for the Department of Agriculture, J&K State. The unit was recently installed and commissioned at Sumbal, Distt. Baramulla of Kashmir valley.

Proper processing ofhops is very essential for its preservation otherwise the quality of hops flowers gets deteriorated withn a few hours after plucking. Investigations were conducted by our Branch Laboratory on the post-harvest technology of this crop and a few hops driers have been set up in the Laboratory at Srinagar. Besides drying of crop grown by our Branch Laboratory and some nearby cultivators, these driers have served as demonstration units for imparting training to employees of Agriculture/Horticulture departments and hops growers of J&K and H.P. States.

The present unit can dry 1.25 tonnes fresh hops, per day if worked in single shift. During the drying season it is usually worked in two shifts and thus double the quantity can be dried. This drier works on the principle of through bed drying with induced drought and multiple grilled and wire netted (perforated) beds are provided in drying rooms. The hot air is made to pass through the hops beds over which hops flowers are kept. Mechanical device is provided for the transfer of semi-dried flowers to lower bed. Dried flowers are made into bales, for easy transportation, under hydraulic pressure

of 50 kg/cm^2.

The unit installed at Sumbal has cost approximately 1.3 lakhs and the whole job was executed on turn-key basis by RRL, Jammu for the Agriculture Department of J&K State.

(RRL Jammu newsletter 7(6); 1980; 27)

365 Pesticides production unit

The Government has cleared the Shaw Wallace plan to manufacture a new range of pesticides in the core sector. The company has received Industrial Licences to produce four basic pesticides namely ethion, dimethiode, malathion and fenitrothion.

The project would be set up at Haldia. The first phase of the project to cost Rs. 4 crores is expected to be completed by 1982 to produce ethion (125 tonnes per year) and dimethoids (150 tonnes per year).

The technology would be imported but the plant & machinery would be locally obtained. Ethion formulations are particularly used in tea gardens to control deadly pests called red mites. Dimethoids is a general insecticide for vegetables.

(Industrial Development News 15(6); 1980; 59)

PERSONALIA

Nil

I N D E X

Additive, Food
  Hyperkensis *in* children 278
  Silcon silica 277
Adulteration
  Apple juice 344
  Food 354
Alcohol, production 336
Analyzer
  Food microbe 328
  Grain constituents 326
  Meat constituents 327
  Nitrosamine 330
  Oxygen, headspace 332
  Protein, in food grains 331
Arecanut peeler 293

Baby food *from* soy/oat 288
Bag sprinter, automatic 324
Bakery equipment
  Basket centrifuge 302
  Hot air oven 303
Basket centrifuge *for* bakery 302
Beverage *from* carrot/passion fruit 289
Beverage, kolanut extract
  Regulation 349
Beverage can, production technology 321

Cabinet *for* hot food 312
Caffeine *in* food
  Regulation 349
  Toxicity 355
Cancer *caused by* talc-coated rice 357
Can-making, new process 321
Canning industry, fruit 358
Cardamom, export 339
Carrot/passion fruit juice 289
Carton-flexible *for* food packaging 320
Cashew feni distillation unit 363
Caustic peel waste, regulation 347
Cereal drier, Geo-thermal energy based 304
Chiller/freezer *for* food use 309
Chocolate coating gun 317
Chromatographic data recorder 333
Cleaner/disinfectant *for* dairy 295
Coconut-based industry 360
Colour additive, food
  Hyperkinensis 278
Confectionery coating *use of* spray gun 317
Cooker *with* electric gas heating unit 316
Corn *see* maize
Cutting/mixing machine 296
Cyclamate *as* sweetener
  Regulation 346

Dairy
  Cleaner/disinfectant 295
Date, import 341
Decorticator *for* Groundnut 292
Dehuller *for* soybean 294
Dehydrated liquor 290
Dehydrator *see* Dryer
Dextrose *from* maize
  Manufacturing unit 361
Digital pH meter 334
Distillation unit, Cashew feni 363
Dryer
  Cereal 304,306
  Fish 304
  Garlic 305
  Geothermal energy based 304
  Grain 306
  Nozzle-type, spray 308
  Onion 305
  Rotary vacuum 307
  Solar energy based 306

Electric/Gas heating bulk cooker 316
Energy *from* tomato waste 285
Export
  Cardamom 339
  Marine products 338
  Oilseed 337
Export duty *on* coffee 353
Extraction unit, malt 359
Extrusion cooker *for* rice bran stabilization 284

Filling/sealing machine *for* jam tube 319
Fish
  Geo-thermal drier 304
  Waste utilization 286,287
Flexible packaging *for* food 320
Freezer
  Cryogenic 311
  Mini-tunnel 310
Freezer/chiller *for* food use 309
Freezing method, food 279
Fruit, canning industry 358

Garlic drier, solar-based 305
Glucose *from* maize
  Manufacturing unit 361,362

Grain analyser 326
Grain drier, solar based 306
Granular/pulveriser
Portable 297
Groundnut decorticator 292

Head space oxygen analyzer 332
Hop processing unit 364
Hyperkinensis *in* children *caused by* colour additive, food 278

Import
Date 341
Oilseed 340
Infant food *see* Baby food
Insect detector
Chemical method 275
Irradiation, food safety 274

Juice
Adulteration detection 344
Carrot/Passion fruit 289
Labelling regulation 343

Kolanut extract *in* beverage
Regulation 349

Liquid level gauge 314
Liquor *in* powdered form 290

Maize starch, manufacturing unit 361, 362
Malt, extract unit 359
Marine products, export 338
Meat
Analyzer 327
Nitrate-cured, regulation 356
Microbial analyzer, food use 328
Mini tunnel freezer 310
Molder *for* food 318
Mono sodium glutamate *in* food
Regulation 350
Multipurpose mill, portable 297

Nigerseed, production 335
Nitrate
Food, regulation 351
Meat-cured, regulation 356
Nitrosamine analyzer, Food 330

Oat/soy baby food 288
Oilseed
Export 337
Import 340
Onion drier, solar based 305
Oven, hot-air based 303

Packaging, beverage
can-making technology 321
Packaging, food
Flexible carton 320
Regulation 348
Packaging, Vanaspati
New process 325
Packaging bag, sprinter 324
Packaging container,
Low-cost repair 323
Packing vessel, rubber lining 322
Passion fruit/carrot juice beverage 289
Paste/ointment machine, automatic 319
Peanut *see* Groundnut
Pear storage, Temperature control system 273
Peeler *for* arecanut 293
Peeling process, Tomato 281
Pesticide production unit 365
Plastic container, low-cost repair 323
Production
Alcohol 336
Nigerseed 335
Production technology,
Beverage can 321
Protein analyzer, food 331
Protein *from* trash fish 287
Purification system
Food 282
Water 280

Rat control *see* Rodent control
Refrigeration, Solar-based 272
Regulation
Artificial ingredients *in* food 342
Caffeine *in* food 349
Caustic peel waste 347
Cyclamate 346
Export duty *on* coffee 353
Juice adulteration 344
Juice labelling 343
Kolanut extract *in* beverage 349
Monosodium glutamate *in* food 350
Nitrate *in* food 351
Nitrate-cured meat 356
Packaging *of* canned food 348
Sodium stearoyl-2-lactylate *in* food 345
Sugar *in* supplemental food 352
Talc-coated rice 357
Rice bran, stabilization 284
Rice, talc-coated *cause of* cancer 357
Rodentcontrol, check-system 276
Roto strainer *for* food use 301
Rubber lining *of* chemical vessels 322

Safety, Food irradiation 274

Sealing/Filling machine for jam 319
Sifter-vibratory 300
Silcorn silica used as food additive 277
Sodium stearoyl-2-lactylate in food
Regulation 345
Solar
Drier for grain 306
Drier for onion/garlic 305
Refrigeration system 272
Soybean dehuller 294
Soy/oat baby food 288
Spill control kit 313
Spray coating for abattoir 291
Spray drier, nozzle type 308
Spray gun for confectionery coating 317
Starch, analyzer 32)
Starch from maize
Manufacturing unit 361,362
Stirrer
Magnetic 299
Variable speed 298
Storage
of pear 273
by solar refrigeration 272
by food irradiation 274
Strainer for food use 301
Sugar in WIC programe supplemental food, regulation 352

Talc-coated rice cause of cancer 357
Temperature circulation bath 315
Temperature control system
for pear storage 273
Tomato
Peeling process 281
Waste utilization 285
Toxicity of caffiene in food 355

Vacuum cooling for vegetable 283
Vacuum dryer, rotary type 307
Vanaspati, packaging 325
Vegetable, Vacuum cooling 283
Vibratory sifter 300

Waste utilization
Fish 286,287
Tomato 285
Water, purification process 280